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URETERAL CALCULI WITH REPORT OF THREE CASES

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Are ureteral calculi primary or secondary? In the large majority of cases, probably between 90 and 95 per cent are secondary, having formed in the kidney, descended the ureter, and lodged at certain levels as governed by size and shape of calculus, size of lumen of ureter, curves of ureter and relation of ureter to iliac vessels. The most common sites of impaction are: first, just below ureteral pelvic junction; second, where ureter curves around iliac vessels; third, in juxta-vesical portion of ureter; fourth, just proximal to vesical orifice.

It is true that in a few cases the stone forms in the ureter at a location in which there was a narrow lumen with infarction of the urinary tract. This fact is somewhat substantiated by the recurrence of calculi at certain levels without demonstrable calculi in the kidney. Stones after impaction can and usually do increase in size.

Are ureteral calculi single or multiple? In the majority of cases ureteral calculi are single. Authorities vote as high as 90 to 96 per cent single. Many combinations have been found, for example: in kidney and ureter on same side; in kidney of one side and ureter on other side (Fig. 10); in both kidneys and both ureters; in both kidneys and one ureter and in both kidneys, both ureters and bladder. This shows how important it is to determine the multiplicity of calculi as well as renal function before operative procedure for removal of any one calculus is undertaken.

Stones in the ureter are found in young and old, male and female. They are more common in the male than female, two to one, and between the ages of thirty and fifty. Ureteral calculi, both descending and impacted, cause both local and general effect. A ureteral stone that consumes no great amount of time in passing from kidney to bladder causes very permanent tissue damage. The resulting edema, of both kidney and ureter, soon disappears after stone has passed into the bladder. If a stone, however, is impacted with complete or partial obstruction to the outflow of urine, a different situation is encountered. There is very seldom complete obstruction. The effect of an impacted calculus on the ureter is quite constant. There is undoubtedly a ureteritis at the point of impaction which often involves all the layers of the ureter and occasionally extends through the wall, causing adhesions to adjacent structures. In long-standing impaction the proximal wall of ureter, as well as pelvis of kidney, is dilated and thinned, causing a definite hydronephrosis and hydroureter. Various clinical signs and symptoms are seen. We may have an obstructive anuria in the side in which the ureter is blocked. We may also have a reflex inhibition of the secretory activity of the opposite undamaged kidney. Grave symptoms arise whne it may block the only functioning kidney the patient has, as well as interfere with the function of a kidney when the function of the other side is also interfered with by presence of a calculus.

Mild or severe infection usually precedes stone formation and practically always follows soon after in the upper urinary tract when urinary drainage is interefered with by an impacted calculus, resulting in a varying degree of pyelonephritis—perirenal infection and systemic signs of renal infection and failure.

Pain is present in a vast majority of ure-

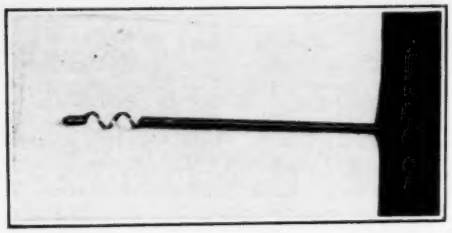

Fig. 1. The Welland Howard spiral stone dislodger. This instrument has a flexible metal shaft size 6, with a spiral tip size 11. This is introduced into the ureter up to the stone, given one turn and withdrawn. Stones not too large will fall into the spiral and are withdrawn with the instrument. This was the method used in removing the stone in Case II. (See Fig. 9).

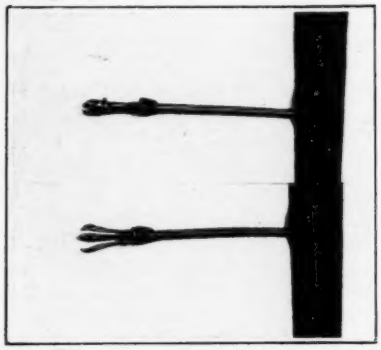

Fig. 2. This is a ureteral stone grasping forceps, with three finger-like jaws which are opened and closed by a sliding collar manipulated from the end of instrument by a wire through the hollow steel flexible shaft. The instrument is passed, while closed (a), up to the location of the stone. It is then opened (b), inserted a short distance further and the jaws closed. Very often large stones may be grasped in its sharp claw-like jaws. It is often used, also, for removal of foreign bodies, stones, etc., from the bladder.

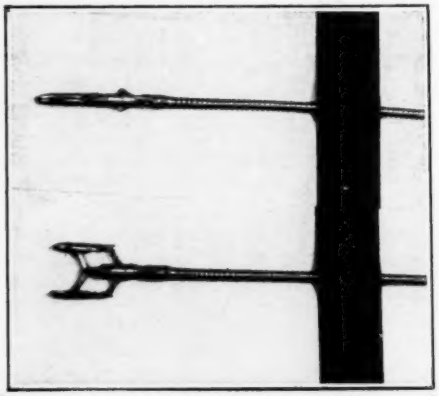

Fig. 3. This is a ureteral dilator with expanding jaws manipulated by a wire through the hollow flexible shaft. It is introduced while closed (a) into the ureter, and by opening the jaws (b) quite forcible dilatation can be done at any point. This instrument was used in Cases I and III, (see also Figs. 7, 8 and 10).

teral calculi, both descending and impacted, varying in degree from severe colicky pain—lasting a few minutes to a few hours, accompanied by nausea, vomiting, abdominal distention, cold clammy perspiration, rapid small pulse—to the recurrent low gnawing pain with occasional fever lasting two or three days, as we often see in impacted calculi associated with varying degree of pyelonephritis. This pain in either case usually radiates down the ureter into the bladder and, in the male, often to the testicles.

There are a few instances in which a ureteral calculus is discovered in which there has been no pain but some bleeding present in urine or during process of other urologic or abdominal investigation.

DIAGNOSIS

The history is a very important step in arriving at a diagnosis. Has the pain which is present in about 98 per cent of the cases been persistent in one location or has it been recurrent? Has an attack of colicky pain, radiating as described before, been present one or more times?—noting severity, frequency and duration.

A differential diagnosis must be made to eliminate the following: inflammatory process in prostate and seminal vesicals, simple uncomplicated ureteritis, simple ureteritis with stricture, mechanical ileus, acute appendicitis, gallstone colic, blood clot from kidney passing down ureter, renal crises of tabes, movable kidney with ureteral kink, chronic pyelonephritis.

A complete physical examination is essential with special reference to gallbladder, appendix, palpation of kidney region and thorough neuroligical examination to eliminate possibility of tabetic condition, complete urine examination, especially looking for blood cells. Supplementing a good history, physical examination, and urine examination, is the all-important urological procedure of systoscopy with ureteral catheterization, plain radiography and uretero-pyelography. Not all stones show in the x-ray. About 25 per cent are composed of uriates and uric acid and are permeable to x-ray.

There are numerous shadows in region of ureter that may be confusing; namely, calcified lymph glands, phleboliths, appendiceal concretions and gallstones. Ureteral catheterization with x-ray catheters plus radiography, affords easiest means of differentiating the above-mentioned as well as determining distance of stone from bladder. A procedure which I find of value, in some cases, as far as diagnosis is concerned, is the use of a wire covered over like a catheter, passed into the ureter. This is fastened

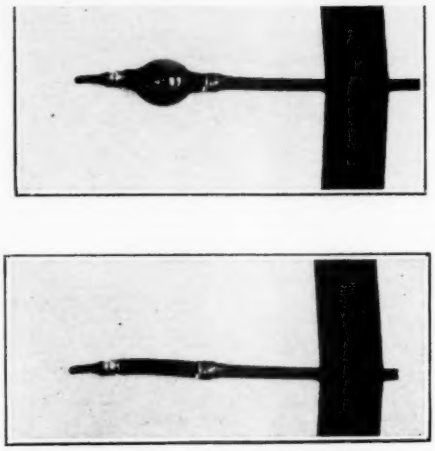

Fig. 4. This is the Dourmashkin ureteral rubber-bag dilating bougie. This is passed into the ureter while collapsed (a), to the point where dilatation is desired, usually just below the stone. Then two c.c. of water are introduced into the dilator causing inflation of the rubber bag (b). This was used in Cases I and III.

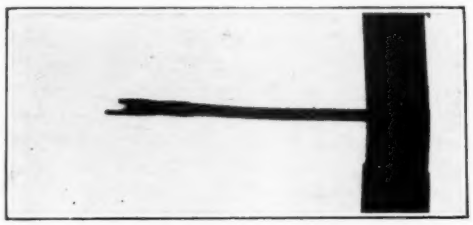

Fig. 5. This is the Turner ureteral meatotomy electrode used with high frequency cutting current. The longer tip is introduced into the ureteral orifice, the current turned on and the electrode forced forward with slight pressure. A well-directed incision can be made, without bleeding. Care should be taken to make the incision along the ureteral ridge, as shown in (a) of Figure 6, and not as shown in (b).

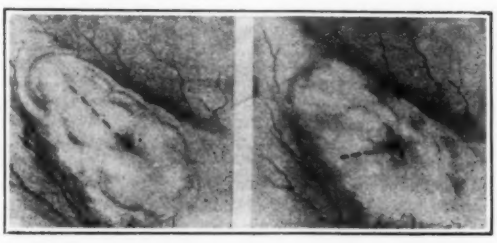

Fig. 6. Cystascopic view of ureteral orifice, showing correct (a) and incorrcet (b) direction of incision to be made with the Turner ureteral meatotomy electrode (Fig. 5).

to a special stethoscope. When the catheter comes in contact with the stone, one can usually hear a definite grating sound.

TREATMENT (REMOVAL)

Much has been done and technic perfected in the past few years that has made about 75 per cent of ureteral stones non-operative. That is, we are able to remove them through cystoscopic procedures.

No attempt at operative removal should be undertaken in presence of severe colic, anuria or renal infection. One can usually succeed in passing a small catheter beyond the obstruction and relief is soon afforded and infection greatly lessened. Occasionally a tightly impacted stone will not allow a catheter or bougie to pass and, if the stone cannot be made to descend by dilatations below, a ureterostomy or nephrostomy should be done. If a stone is impacted and one is unable to dislodge it and is successful in passing a catheter beyond the obstruction, it can be left in the ureter until one is sure of improvement in the general condition of the patient and that the local infection in the kidney is no longer progressive; then operative removal must be undertaken. A special catheter is now made, covered with gold leaf to prevent erosive action of the urine, in cases in which one finds it necessary to leave catheter in ureter over a considerable length of time.

As it is the obstruction, with the resulting back presusre and spasm above the obstruction, that causes the pain in renal colic, a much recommended procedure is immediate catheterization of the ureter with passage of catheter above the obstruction. Relief will be almost instantaneous. This procedure is to be urged when one dose of opiates fails to relieve the pain.

In cases of chronic impacted ureteral calculi, a slower and deliberate procedure at one or many sittings, is often successful. Quite large stones high up in ureter have been "teased" down by dilatation of the ureter by various methods. Local anesthesia is usually all that is required.

As the vesical portion of the ureter and the ureteral orifice is often narrowed, it is necessary to enlarge this opening in the majority of cases. I have been quite successful using the Turner ureteral meatotomy electrode (Fig. 5) with high frequency current for enlarging the ureteral orifice. There is no bleeding and a well-directed incision can be made. For stones lodged higher up, I use the Dourmashkin rubber-diaphragm catheter with the filiform tip. (Fig. 4). This can be inflated with air or water, water being preferable because one can tell just how

large the balloon is inflated after insertion to location of stone. Often the stone drops into the dilated portion below and starts its descent, only to become lodged again at a curve or narrow portion of the ureter below. The expanding ureteral dilating forceps (Fig. 3) is also indispensable in the routine removal of stones. In the three cases to be presented, together with the dilators mentioned above, I used the Howard spiral stone dislodger (Fig. 1). In one case nothing more was necessary than to pass the instrument to point of obstruction, give it one full turn, and then, with alternate slight turns, pull spiral from ureter, and stone was seen to fall from curve of spiral into bladder. To pass numerous catheters or bougies into ureter is often helpful but I have never been given much help with this procedure.

Operative removal is indicated when the operator feels that he is going to be unable to remove the stone. This can usually be determined after two to four attempts. Size of stone, length of time impacted, the pain present and the constitutional effect upon the patient, should guide one as to the length of time to temporize. With grave constitutional symptoms and inability to get beyond obstruction, immediate operation is indicated. If unable to remove stone but successful in passing the catheter beyond the obstruction, one should improve the condition of the kidney and the patient before operative removal of stone is undertaken.

CASE REPORTS

Case I. Patient, adult white female, walks into hospital for urological examination. One year ago patient had an attack of severe pain in right side radiating into bladder, accompanied by nausea, vomiting, considerable shock. The pain lasted nine hours. Two hypodermics of morphine, were needed for relief. The pain disappeared but during the intervening year the patient had attacks once or twice a month, lasting from two hours to four days, requiring morphine for relief. Pains became worse and, during the past three months, urination was frequent and painful, suggesting accompanying cystitis. Patient came to me October 15, 1930. Urine examination shows occasional blood cell, many pus cells. Bladder specimen showed quantitative albumin 0.396 and, with history, I advised cystoscopic investigation. First cystoscopy was done on October 20, 1930. The bladder was inflamed, especially in trigonal area. Left ureteral orifice normal; right, edematous and elongated. Catheter was easily passed into left ureter; catheter was passed about four inches into right ureter and met an obstruction. No size catheter would pass obstruction at this time. Right pyelogram not obtained. Plain film (Fig. 7) shows stone about the size of a date seed in right ureter, just below the sacro-iliac joint.

Operative cystoscopy on same date under local anesthesia. The ureter was dilated, stone forceps introduced about four inches, not successful in grasping stone. The Howard spiral stone dislodger

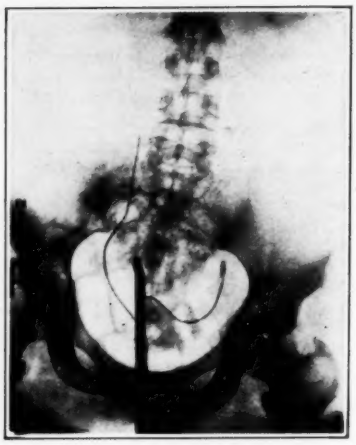

Fig. 7. (Case I.) Roentgenogram showing location of stone when diagnosis was made.

Fig. 8. (Case I.) Roentogram showing stone in vesical portion of ureter with Howard's spiral stone dislodger in contact with stone. The insert shows the actual size in centimeters of the stone after removal. All the instruments illustrated in this article were used at various times in this case.

was introduced same distance into ureter and met obstruction. This was removed. Three catheters were introduced into ureter, two of them passing obstruction. No further procedure at this time.

Second attempt, October 27, 1930. Local anesthesia. Ureteral orifice was dilated and expanding dilator passed three inches into ureter and ureter dilated as instrument was withdrawn. Spiral stone dislodger passed to stone but was unable to pass obstruction. A catheter with wire stylet would not pass obstruction. Obstruction was four inches from orifice.

Third attempt on November 18, 1930. Local anesthesia into bladder and small amount into right ureter. Obstruction met at usual level. Attempt to pass ureteral stone forceps to obstruction failed,

probably because of pockets in the mucosa. The spiral stone dislodger passed up to the stone and considerable traction was necessary when withdrawing instrument. The stone was probably brought down to a lower level. X-ray was taken showing stone about two inches lower in ureter.

Fourth attempt on December 12, 1930. Lower right ureter was dilated with expanding dilator. Stone forceps and spiral stone dislodger could be introduced into ureter about one inch, then met obstruction.

Fifth attempt on December 30, 1930. Dilatation of vessical portion of right uretor. Stone evidently about three-fourths inch from orifice. X-ray taken (Fig. 8) shows relation of spiral stone dislodger to stone in the lower portion of ureter.

Sixth attempt on January 6, 1931. Ureteral orifice was enlarged with the Turner high-frequency meatotomy electrode, the incision extending along ureteral ridge about one-half inch. The spiral stone dislodger was inserted and removed with considerable difficulty, bringing with it some granulation tissue. Patient went home immediately after each cystoscopic. That same day patient sent stone (Fig. 8, insert) to my office and has had no trouble referable to this condition since.

Case II. White female, age 35, history of first attack of pain simulating renal colic in November, 1929. Some dull pain constantly present with attacks of acute colic two or three times a month, requiring morphine for relief. Pain definitely located in left lower quadrant. Considerable tenderness in left kidney region. Kidney not palpable. She was referred to me for cystoscopic examination in January, 1930. At this examination there was present a moderate trigonitis. Both ureters easily catheterized. On the left side, catheter met obstruction about one-half distance to kidney (Fig. 9). Blood appeared through the catheter when this obstruction was encountered. Pyelogram taken. No stone was seen but, because of the bleeding and obstruction and history, I felt sure that a stone was present. The patient returned for further cystoscopic study one week later. At this time the Howard spiral stone dislodger was passed up ureter to the obstruction and given a complete turn and then withdrawn by a rotary motion. When the instrument came from the ureter, a small stone (Insert, Fig. 9), together with a quantity of granulations, was seen in the curve of the spiral. The stone fell into the bladder and was easily removed with stone forceps. Patient has been entirely free from pain since. This is an example of an impacted stone high up in the ureter removed during a single cystoscopic procedure.

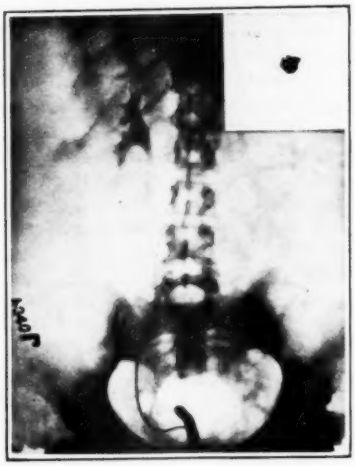

Fig. 9. (Case II.) Roentgenogram showing catheter in ureter. Stone was just beyond the end of catheter, but was not visible on the x-ray film. The Howard spiral stone dislodger was the only instrument used in removal of this stone. The insert gives the actual size of the stone.

Case III. Patient, white female, aged 32; gives history of pain in right side for ten years, intermittent in character and ranging from an acute colic lasting a few hours to a dull aching pain lasting several days. Patient is quite anemic and run down. Urine showed pus, blood, casts and albumin. First cystoscopic examination was June 14, 1929. I was not able to pass catheter into right ureter. X-ray

(Fig. 10) shows left renal lithiasis and right multiple ureteral lithiasis. Patient refused further treatment at this time and returned February 14, 1930. Afer two attempts at removal of stones, by using the Turner ureteral meatotomy electrode, with cutting current, to allow introduction of expanding dilator and Dourmashkin rubber-bag dilating bougie, patient was dismissed and asked to report later. Soon after her arrival home, she stated, that, while urinating, she felt a cutting pain at two different times. Each time urine stopped an instant. Patient stated that she looked for stones but failed to find any trace of them. She has been entirely free from pain since. In all probability stones were passed at this time following enlargement of ureteral orifice with the Turner meatotomy electrode and dilatation of the vesical portion of ureter as mentioned above.

DISEASES OF THE CERVIX

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(Read before the Maricopa County Medical Society.)

Diseases of the cervix are very common. One authority states that not less than 85 per cent of parous and 25 per cent of nulliparous women have diseased cervices. And while it is true that many women with diseased cervices are not disturbed by them, it is also a fact that most of the annoyances and suffering caused by pelvic trouble have their origin in pathological cervices. Moreover, even the apparently symptomless cervicitis may act as a focus of infection capable of producing serious trouble elsewhere in the body. And above all let us always keep in mind that a diseased cervix may be the forerunner of cancer of the cervix. Davis is, therefore, of the opinion that no examination of any woman is complete if the cervix has not been investigated. As a thorough understanding of the normal structure and the pathologic changes brought about by disease of an organ is indispensable to a correct diagnosis, a considerable part of this paper is devoted to a review of the anatomy and pathology of the cervix.

ANATOMY

The normal cervix of an adult nullipara comprises the lower third of the uterus. It is cylindrical or spindle-shaped. Above where it fuses with the corpus uteri, there is a constriction corresponding to the internal os. Below, the cervix enters the anterior wall of the vagina in such a manner that the lower surface faces the posterior fornix of the vagina. The vaginal attachment divides the cervix into a supravaginal portion and a vaginal portion, also called a portio. The external os presents a short slit or a small round opening. The anterior lip of the os is shorter and thicker than the posterior lip. On either side of the cervix lie numerous blood vessels embedded in loose fatty tissue. This tissue extends upward between the layers of the broad ligaments and is known as the parametrium. The cervix is rich in lymphatics which communicate with the lymph channels of the uterus. The ligaments of the cervix are the two uterovesical, two broad and two uterosacral. They consist of bands of elastic and muscle fibers which spread out from the cervix in the form of a six-pointed star. Each arm of this star is covered by peritoneum and contains numerous blood vessels and lymphatics. These ligaments, together with the vaginal attachment, fix the cervix in its elevated position and the elasticity of the normal ligaments permits the free mobility of the uterus.

Structurally, the cervix differs from the uterus in several respects. The muscular coat of the cervix contains more elastic and connective tissue than that of the corpus. This gives the cervix greater thickness and strength. The surface of the canal is not smooth but is crossed by the characteristic folds and ridges known as the arbores vitae. The mucosa lining the canal is thicker and denser than the rest of the endometrium. The ciliated columnar epithelia lining the cervical mucosa are larger and dip down into the muscle to form branched racemose glands in addition to the simple tubular glands of the uterus. These racemose glands secrete a clear tenaceous mucus. Just within the external os, the columnar epithelia give way to the stratified squamous epithelia of the vagina which cover the portio, giving it a smooth and shiny appearance. Only the posterior surface of the supravaginal portion is covered by peritoneum. The normal covering of the portio is about twenty cells in thickness. These cells are similar to those of the skin except that those of the portio have very little keratin. The upper layer is made up of flattened dried-up cells which consist mainly of thick walls, no protoplasm and, rarely, compressed nuclei. The next layer is formed of semi-flattened cells with ill-defined nuclei and also without protoplasm. Beneath this are layers of polyhedral cells which make up the bulk of the epithelial structure. These cells possess protoplasm, their nuclei stain well and their walls are thinner. The lowest layer rests directly upon the muscular coat of the cervix and consists of low columnar epithelia, one cell in thickness, whose protoplasm and nuclei stain best. According to Bailey, these low columnar cells, which, by the way, must not be confused with the glandular columnar, are the youngest and most active of the squamous epithelial structure. Their function is the production of new cells to make up for the loss in desquamation or destruction. The new cells when born are columnar or cuboidal in shape. They are then shoved up to the next level and by compression their forms change to polyhedral. This change continues with their ascent, and by the time they reach the surface they have undergone a metamorphosis from the young active columnar to the old and passive stratified squamous cells, whose only usefulness is that of offering a barrier to the entrance of bacteria.

This, briefly, is a description of the normal cervix. Disease produces changes in the structure, function and position of the cer-

vix. The diseases of the cervix that the general practitioner most frequently meets are inflammation and neoplasms. In this paper only the first will be considered, as the treatment of neoplasms, with the exception of a simple polyp, belongs to the specialist.

ETIOLOGY

The normal cervix is free from bacteria. In rare conditions, germs may come down from a ruptured appendix through the tubes and uterus, or bacteria may be carried to the cervix by the blood and lymph streams. Ordinarily, however, the entrance is by way of the vagina. The infection may be introduced directly into the canal through a healthy os by the examining finger, instrument or stem pessary. More often the infectious material is deposited in the vagina during coitus, and the everted lip of a torn cervix is bathed in the diseased secretion. The most important predisposing cause, then, is trauma. The injury in itself may be of minor importance. But as a potential gateway to the entrance of pathogenic microorganisms, every cervical laceration assumes great significance.

The more common bacteria-produced cervical infections are staphylococci, streptococci, bacillus coli and last, but not least, the diplococcus of Neiser. Over 75 per cent of pelvic infections are produced by gonococci. The normal stratified epithelium of the vagina may serve as a barrier to the passage of pathogenic germs and they may then be destroyed by the vaginal secretion and flora. But there is a limit to the capacity of these protective forces. And they will break down sooner or later if infectious prostatic or seminal secretion is repeatedly deposited in the vagina. With the gonococci, other bacteria may be introduced. But long after the accompanying germs have been eliminated, the gonococci may still be found in the cervix. And as is so often the case in gonorrheal prostatitis, the glands of the infected cervix may harbor dormant gonococci for years, only waiting for a chance to come up to the surface whenever conditions favor their emergence from obscurity.

PATHOLOGY

When microorganisms of a kind that can live in an alkaline medium find their way to the cervical mucosa, the result is the familiar phenomenon of acute inflammation. The invader is met by an influx of leukocytes and in the ensuing battle many cells of the invading and defending forces perish. The irritation produced in this process stimulates the mucous glands to greater activity. The increased volume of mucus, mixed with the products of inflammation, ecapes through the external os as leukorrhea. The character, color, odor and amount of the discharge are governed by the kind and virulence of the invader and by the nature of the host's reaction. But any leukorrhea is detrimental to squamous epithelia. Those cells of the portial epithelia which are situated near the os and therefore come in closer contact with the virulent discharge, perish first. The area they have occupied becomes denuded and filled with inflammatory material. This is a true erosion, but it lasts so short a time that it is rarely seen. What is generally spoken of as erosion follows immediately after this first stage of the inflammation.

As soon as an area near the os is denuded of epithelia, it is covered by glandular cells. These columnar cells are more resistant to infection than the squamous. And an infection that may be fatal to the squamous would serve only as an irritant to the columnar. All the glandular cells so irritated are stimulated to produce more mucus. But those cells that are situated just within the external os are also stimulated to proliferate whenever there is a chance for expansion. It is these young cells that leave the canal and occupy the vacant premises on the portio. Once there, these enterprising youngsters proceed to change their new environment to look like the mucosa on the other side of the os. And very soon the portio, which never possessed a single gland, is honeycombed with straight and branched mucous glands. However, despite the enormous amount of work expended on their new homesteads, the columnar cells are always ready to retire and let their weaker neighbors move in again whenever the latter are in a position to stage a come-back. And this really takes place when the inflammation subsides completely. The lower layer of the adjacent healthy squamous epithelia then proliferates, the young cells get under the glandular cells and lift them out of their beds. The succeeding generations of squamous cells continue the good work, lifting and compressing the older cells above them, until the first generation, by now flattened and stratified, reach the surface, and healing is complete. If, however, the host is unable to overcome the infection completely, then the squamous epithelia have no chance to dispossess the columnar squatters. On the contrary, as more leukorrhea is produced, wider areas of the portio are continually desquamated. The expanding abrasions are quickly occupied and reorganized by the glandular cells. This new mucous cover is known as erosion. In reality, this is not an erosion but a proliferation, and Bailey dropped this

old misleading name and christened this process periauricular cervicitis. The opening of the new as well as of the old gland ducts may at times be stopped up by inflammatory products. The resulting cysts are known as nabothian follicles.

As time goes on and the inflammation is not terminated, the infection may spread to the other pelvic organs, either directly through an open internal os during menstruation or labor, or by way of the lymphatics. An infected uterus with the accompanying increase in its size caused by round-cell infiltration and circulatory stasis, results in chronic subinvolution. Lymphangitis of the uterosacral ligaments shortens and hardens them and displaces the uterus. In a similar way, the ovaries and tubes, even the peritoneum, may become involved. And even when none of these changes takes place, the cervical glands may serve as storehouses of infection from which disease may be carried to other and more remote parts of the body. Moench, of the Mayo Clinic, has shown that the streptococci found in cervices of women suffering from arthritis are similar to the streptococci removed from their inflamed joints. The same germs when injected in rabbits produced acute arthritis in the animals.

Sometimes the infection is so virulent that it destroys even the columnar cells. In that case the abrasion on the portio remains exposed. Its base is lower than the healthy squamous surface, the walls are ragged, and the cavity contains unhealthy looking granulations and inflammatory debris. This is indeed a sad picture, but it is by far less dangerous than the low-grade inflammation which results in the so-called erosion. Bailey, who examined histologically 850 cervices that were removed for various causes, found that every case of cancer had an erosion at its origin. He does not claim to know the cause of cancer, but his extensive studies convinced him that an erosion is a constant factor in the formation of the cancer of the cervix. A virulent infection destroys the epithelia and no cancer results. But when the infection is of a low grade, it can only irritate the cells, and irritation stimulates them to greater activity. When these cells possess a function normally, their activity when over-stimulated is also purposeful, as we have seen in the case of the columnar epithelia. But the majority of the squamous cells have no normal function. They are always passive. When, therefore, these polyhedral cells are constantly irritated into activity, what are they to do? They are of no account as fighters against the invader, nor have they anything to secrete. The only thing left for them to do is to reproduce, and this they do with a vengeance. But since this proliferation is abnormal and purposeless, the result of their labor is a cancer. Occasionally, the young glandular cells of the erosion, which are naturally not quite as well-balanced as their sires across the border, will forget their true mission, and when provoked by strong and continued irritation may respond with aimless proliferation and produec an adenocarcinoma. This, however, happens rarely, and the usual cancer of the cervix is an epithelioma. A chronic ulcer of long standing might also reach a certain stage of low-grade infectivity, and exert the same influence on the polyhedral cells as an erosion. The latter, however, is the most constant factor in cervical cancer formation.

SYMPTOMS

Acute endocervicitis has only one symptom, leukorrhea. If the patient complains of pain or burning, it is due to an accompanying vulvitis or vaginitis. The character and the amount of the discharge vary. It may be clear liquid, odorless and scanty, or it may be greenish-yellow, of a nasty odor, and profuse. On examination, the cervix looks and feels larger and edematous. A bright red halo surrounds the external os, and some mucous membrane may protrude from it. The squamous epithelia of the portir and the posterior fornix look red and shiny. The pus contains the causative organism. If a gram-negative diplococcus is found, make sure that it is not the Micrococcus catarrhalis before pronouncing it specific. When in doubt, make a blood culture. The diagnosis of acute endocervicitis is made from the above findings, after excluding disease of the uterus and tubes, and from the history.

The symptoms of the ordinary chronic endocervicitis are not any more definite. There is the discharge, which may be scanty or profuse, mucoid or purulent, odorless or foul-smelling. There may be dyspareunia, slight hemorrhage after coitus, and some form of vulvar dermatitis. In more advanced cases, the leukorrhea may cause much psychic distress. If the uterosacral ligaments are involved, there will be backache and dysmenorrhea. When the lymphangitis reaches the uterus, the ensuing enlargement of that organ will produce a bearing-down sensation with backache and metrorrhagia. When the ovaries and tubes are affected, the symptoms become complicated with those of oophoritis or salypyngitis. On examination, the cervix appears larger and harder, the squamous epithelia are smooth and pink, and the erosion around the os is red, velvety to the touch and bleeds easily. The causative

microorganism may or may not be present in the discharge. The gonococci especially may be lying dormant in the recesses of the racemose glands.

DIFFERENTIAL DIAGNOSIS

A good history and careful general and pelvic examinations are essential. The pelvic examination must be done bimanually and with a speculum under a good light. In solution. Apply a pledget of cotton soaked tissue from a laceration, a cyst, a fibroid or malignancy. Induration due to a laceration is limited to the scar, while that due to malignancy is more general. If the induration is caused by a cyst, it will disappear after the cyst is emptied. A fibroid should be examined microscopically.

An ulcer may be caused by a badly fitting pessary, a prolapsed uterus, syphilis, chancroid, tuberculosis or cancer. The first two causes are self-evident. Syphilis in any stage should not be difficult to diagnose. When in doubt and the patient's general condition permits, a therapeutic test may help. A chancroid will respond readily to the cautery. Tuberculosis of the cervix is rare, yet it does occur. It may be secondary to tuberculosis of some other part of the body. If it is primary, the germs are carried to the cervix from a tuberculous epididymis during coitus. The history may help here. If still in doubt, the scrapings may be sent to the laboratory.

In the case of a bleeding spot, Crossen advises to test it with a 10 per cent sulphate solution. Appuy a pledget of cotton soaked in the solution to the bleeding area for two minutes. If the bleeding stops, it is not malignant. Repeat this in three days. If there is no improvement, remove a section for examination.

A biopsy is not difficult to do. Use a sharp knife or a punch, and touch up the wound edges with the cautery. But be careful to remove the specimen from the most suspicious area, and include the epithelium. Otherwise, the pathologist may report "chronic cervicitis," and the patient continue to produce a cancer. It is not often, however, that we have to do a biopsy. Usually the case is easily determined, whether it is cancer or benign, without a biopsy. Novak states that the diagnosis could be made without a biopsy in more than 95 per cent of cervical diseases. If the erosion or eversion is pink, smooth, firm, with no areas of induration, friability or vascularity, it is not malignant. If there is an indurated area on either cervical lip, especially if the overlying surface is granular, vegetative or ulcerated, and very vascular; or if an erosion contains a hardened or raised area with vascularity, sponginess or ulceration of the surface, then do a biopsy. If the portio is normal and intracervical mucosa seems vascular or granular, curet the canal and send the scrapings to the laboratory.

TREATMENT

Prophylactic. Taking into consideration that the most common and most troublesome infection of the cervix is caused by the gonococcus, it can readily be seen that the only effective way to protect women from this ravishing infection is by making an honest attempt to eradicate gonorrhea in the male. Any doctor, therefore, who treats gonorrhea in the male in a slip-shod manner is not only acting unprofessionally toward his patient, but he is also guilty of exposing at least one woman to the suffering and dangers of pelvic disease. It is inexcusable for a modern doctor to treat specific urethritis without making frequent microscopic examinations. And it is nothing less than scandalous to dismiss a patient as "cured" without a thorough investigation. While we have no means of determining an absolute cure, we do have certain well-established procedures that can be relied upon in almost every case. Though this is not a treatise on male gonorrhea, it is not out of place to state that before discharging a case of anterior urethritis, a smear obtained from a provocative injection of silver nitrate should be sent to the laboratory for examination. The reason for this precaution is the fact that even doctors are subject t ohuman weaknesses. And in protracted cases, especially when the patient is in a hurry to get married, even an honest man may fail to find the germs though they are still present in Littre's crypts. In posterior urethritis, where a criterion of recovery is so much more difficult to determine, the attending general practitioner should not discharge the patient without a consultation with the best urologist available.

Next in importance is the proper attention to cervical tears. Under the best of obstetrical skill and care, lacerations of the cervix will occur. We are rarely able to prevent them, but are always able to treat them. The best treatment is suturing of the laceration immediately after the placenta is expelled. Whether this is done or not, every woman should be examined six weeks after labor, and treatment instituted, if the cervix is found diseased.

It would of course be a platitude to state that all vaginal examinations and instrumentations should be performed as aseptically as possible. Still, even modern doctors do get careless at times. And even such ultra

modern men as radiologists have infected cervices by using unsterile radium tubes.

Regarding the use of pessaries, gynocologists are no longer in agreement as to the benefits a patient may derive from them. But all agree that a poorly fitting pessary may cause serious damage. It is therefore important that the doctor who uses a pessary should first make certain that it fits the patient and then have her return at stated frequent intervals for examination, to make sure that no damage is caused by the pessary. And because the uterine cavity cannot be inspected, no intrauterine pessary should ever be used. They are still employed by some to help dilate a narrow cervical canal and by others as contraceptives. Dilatation can be done better by sounds or with the galvanic current. And safer and more reliable contraceptives are now available than those barbaric intra-uterine contraptions.

Active Treatment. Acute endocervicitis is seen rarely. When a patient seeks medical aid it is for some troublesome complication. In those rare cases of endocervicitis that are seen without complications, the opinion of gynecologists is divided. Some advise rest in bed until the acute attack is over, and nothing else. Others maintain that the proper treatment consists in getting rid of the germs by going after them with chemicals right into the cervical canal. If an ordinary practitioner may venture an opinion, neither of these extreme views sounds very reasonable. It is not usually practicable to keep a patient in bed when she suffers no discomfort from her disease. And to indulge in intracervical manipulations in the presence of an active infection is certainly dangerous. A more rational method of treatment seems to be the one suggested by Bandler: Clean the vagina and portio. Paint them with 4 per cent mercurochrome solution. Remove, with the aid of a suction-tube, as much inflammatory mateiral from the canal as you can. Paint again the portio with mercurochrome solution. Pour into the vagina an ounce of glycerine. Pack it with gauze strips (two-inch bandage makes a good packing material). Remove the packing in 24 hours and repeat the process until the acute stage is gone. Here you are actually doing something for the patient from which she may derive some benefit. And if, despite your conservative treatment, the uterus or tubes should become involved, you will at least know that it was not your meddling that gave the infection a lift.

The indications for chronic endocervicitis are more definite and the results, as a rule, more satisfactory. Until recently, surgery was the mainstay in obstinate cases. Later radium came into vogue. Now the pendulum is swinging the other way, and a man of the caliber of Dr. Dannereuther, himself a surgeon of note and a teacher of gynecology, states that most gynecological conditions do not require operations. And he goes on to say what we minor lights have suspected all along, that the ability to perform pelvic operations is of minor importance as compared with skilful differential diagnosis and expertness in applying non-operative therapy, and that it is more creditable to the physician, and certainly to the patient's advantage, if symptoms are relieved by office treatment rather than by hysterectomy. As for radium, it has surely demonstrated its life-saving properties in numerous cases of malignant cervices. But that should not blind us to the fact that radium is a dangerous agent. It is not to be employed in chronic cervicitis, especially if the patient is still in need of ovarian hormones, before other methods have been tried.

The ordinary case of chronic cervicitis will respond to some such simple treatment as the following: Clean the vagina and portio. Paint them with mercurochrome solution. Remove the discharge from the cervical canal with the aid of a solution of sodium bicarbonate. Dry the canal and paint it again with mercurochrome solution. Inject a few drops of the same solution into the substance of the portio with a dental hypodermic syringe. Pack the vagina with iodoform gauze. Remove the packing in 48 hours and repeat the treatment for several weeks. (Instead of iodoform gauze, glycerin and gauze may be used as in acute endocervicitis). If there is no improvement within a reasonable length of time, say, two months, or in cases where it is not advisable to have the patient come to the office too often, use the electric cautery. Its contraindications are pregnancy and acute or sub-acute inflammation of any pelvic organ.

The cautery is the treatment of choice in chronic ulcers and in erosions following child-birth injuries. It is a safe and easy method. It can be done in the office and does not require any anesthetic in most patients. The procedure is as follows: After cleansing the vagina and cervix, a small nasal-type electric cautery is applied to the exposed membrane along its whole length, 5 mm. deep and 1 cm. apart. Nabothian cysts, if present, are punctured, their contents evacuated and their bases cauterized. The cervix and vagina are then painted with 10 per cent mercurochrome solution. The

patient is told that during the next ten days the discharge will be more profuse, necessitating her cleansing the external genitalia several times a day. Douches are better avoided, unless the discharge becomes too annoying. In that case, a 1:5000 potassium permanganate douche may be used occasionally. Once a week have the patient come to the office for treatment. Clean out the vagina and cervix and paint them with mercurochrome solution. The cauterization may have to be repeated in two weeks. Healing is usually complete in two months. The leukorrhea is gone and there is a constant improvement in the other symptoms caused by the endocervicitis. But look out for stenosis of the cervix. If it does appear, dilate. When the entire canal is infected, the cauterization will have to be more extensive. Under gas anesthesia, the cervix is dilated and several strokes are made with the cautery along the whole length of the canal up to the internal os. In very obstinate infections the removal of the entire cervical mucous membrane may have to be considered. This can be accomplished by the use of surgical diathermy under local anesthesia. But for this kind of work special training is necessary and some gynecologists still prefer Sturmdorf's operation in those cases.

A word about medical diathermy in gynecology. All agree that it is useful in relieving the discomfort caused by adnexitis, parametritis, and pelvic adhesions. But does medical diathermy cure gonorrheal endocervicitis? Corbus and O'Conor say definitely, yes. Dannereuther and his associates say just as positively, no. So here you have your choice. Nor could I find a more satisfactory answer to the question of what place vaccines sholud be given in the treatment of diseased cervices.

And now let me conclude with an important reminder. Not every case of chronic leukorrhea is in need of local treatment. If the patient is overworked and anemic, painting the cervix with mercurochrome will not stop the discharge. When rest, proper food and Blaud's pills shall have succeeded in building up the patient, the leukorrhea may disappear spontaneously.

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LAPAROTRACHELOTOMY— ITS ADVANTAGES COMPARED TO THE CLASSIC CESAREAN

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(Presented before the Maricopa County Medical Society, September 29, 1930).

This short paper is presented in the belief that more medical meetings should show on their programs a subject of obstetrical interest. Its theme is one of generalization rather than a maze of detail, and deals with one phase of an issue that has much to do with maternal welfare and safety. There is a great deal in the current literature dealing ably with the subject of laparotrachelotomy. There are definite conclusions to be drawn from this source, besides a few impressions from a still small personal experience and observation.

Granting that delivery of the child by the abdominal route is indicated, and omitting, for the time being, discussion on that point, laparotrachelotomy has several advantages over the classic cesarean. The latter still has the greater vogue, but, according to a recent analysis by Thompson, the perseverance of De Lee, Beck, and others, in their teachings, apparently is bearing results. The incidence of low cervical section, employing De Lee's technic, has increased markedly over the old operation during the past year. It is now quite widely used in the better-known maternity hospitals and clinics on the Continent as well as in the United States.

The technic of the operation was based upon Sellheim's third method, and is accurately described in later editions of De Lee's textbook. Technically, the operation is more difficult, but, according to authority, the necessary skill should be possessed by one professing ability to decide when abdominal section is necessary. Only rarely is the classic section preferred, when urgent haste is required to save the babe, or when dense adhesions are present following previous surgery, especially ventro-fixation. Severe bleeding is rarely encountered with the cervical operation and haste is not necessary. It is well adapted to the use of infiltration anesthesia, to which its enthusaists ascribe much credit for the lessened morbidity and mortality. After the patient has

been in labor for some time, the operation is more easily done, and its safety to a certain limit is not lessened. The test of labor may therefore be employed in borderline cases, and this alone justifies its existence.

Cesarean section has not shown as yet that it is a vital factor in the lowering of our maternal mortality. Besides factors outside of this paper, this fact is due to the high mortality attending the operation even under favorable conditions. The puerperal mortality rate for 1925, in Detroit, from abdominal section was 13 per cent. One series of unfavorable cases showed a death rate of 42.7 per cent. It is true that analysis of these cases shows that poor prenatal care, faulty placing of indications, and similar factors, were much at fault. More recent and more complete statistical studies by Greenhill, Jellet, Kustner, and others, show that there is a mortality with the classic cesarean varying anywhere from 2 to 50 per cent, and that, in those surviving after-complications, the risk is greater with another pregnancy. Very few series show a rate less than 4 per cent for the old operation, and the average is between 10 and 12 per cent. Subsequent rupture of the uterus occurs in 3 to 4 per cent of following pregnancies, 20 per cent occurring before the onset of labor. About three months ago two cases of ruptured uterus following classic section, came under my observation, one at eight and one-fourth months, and the other following several hours of labor, the previous cesarean being unknown to the physician who attended her up to the time of rupture.

The mortality rate from the low cervical section is remaining close to 1 per cent. Greenhill has done over one hundred without a death. A series reported in 1925 from the Chicago Lying-In Hospital showed 330 operations with two deaths, only one of which could be ascribed to the delivery. A recent report of 874 cases shows a mortality of 1.26 per cent. The eleven deaths showed gangrenous appendicitis once, tuberculous meningitis once, pneumonia after ether twice, embolism once, eclampsia twice, sepsis once in a case I remember finding in serious condition and sending in when I was on the service, and peritonitis three times. Resection of tubes for sterilization was responsible for one of these. A smaller series of classical sections done by the same operators showed a mortality of 4.76 per cent. It must be remembered, furthermore, that these were more or less picked cases, while the cervical section was used many times on unfavorable cases after long labor, attempts at delivery, and even when known to be slightly infected.

The immediate morbidity is definitely lowered, shock is decreased, hemorrhage is absent or only slight, and the patient's convalescence is much smoother. Vomiting, tympanites and severe pain are rare. Peritonitis is feared much less because Hofbauer has shown definitely that the lower uterine segment resists infection better than the fundus. Added to that, is the fact that the incision is completely covered by the peritoneal flaps. Healing of the lower segment incision is better and more prompt because of being placed in the non-contractile portion of the uterus. Danger of rupture of the uterus is minimized tremendously because of this fact. There are on record only twenty-two cases of rupture of a low cervical scar and all but three of these have occurred during labor. Danforth and Grier, in a very recent paper, report rupture of the scar after the classic operation in 4 per cent of cases. One-fifth of these occur between seven months and eight and one-half months, so that a woman who has had a classic section is not safe at any time during the latter part of her pregnancy.

Worthy of repetition is the fact that laparotrachelotomy may be employed, without materially increasing the hazard, after the patient has had a reasonable test of labor. This is of especial value in borderline cases, as nature frequently surprises with an easy delivery from below when dystocia was expected. It is to be hoped that the safety of the new operation will make possible the doing of fewer sections because of our being able to allow the patient the test of labor. It will be unfortunate if the safety feature of this abdominal section encourages obstetricians to substitute it for other sound obstetrical principles except in cases where sharply indicated.

THE CHILDHOOD TYPE OF TUBERCULOSIS. Eugene F. Johnson, M.D., Nopeming, Minn. Minn. Med., Sept., 1930, p. 613.

Much is being written on the relation between adult and childhood tuberculosis. This paper presents some illustrative cases from the Nopeming Sanatorium. Childhood tuberculosis is the result of a primary infection with the tubercle bacillus and the initial lesion may be anywhere in the lung. Adult tuberculosis is the result of reinfection and the lesions are usually at the apices and along the pleura. The associated tracheobronchial lymph nodes are always involved in the childhood type, while in the adult they are not involved except in the terminal stages. Caseous lesions in the primary type become encapsulated or calcified, whereas in the adult type they excavate or fibrose, or both. In the childhood type, infiltration areas commonly resolve with little evidence, while in the adult type infiltrated areas resolve with production of fibrous tissue. These changes are shown by x-ray examination nad must be borne in mind in interpreting x-ray densities.

THE TREATMENT OF PNEUMONIA WITH QUININE

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Quinine has specific toxicity for pneumococci, I believe I have proved, both in the culture tube and in the patient.

During the winter of 1907-1908, while superintendent of the Missouri State Sanatorium for Tuberculosis, I treated a considerable number of cases of pneumonia.

This was the day of nihilism, especially for pneumonia, in which it was contended that no drug had beneficial effects. There came to my attention an article by Dr. J. W. Galbraith[1], of Cananea, Mexico, in which he reported fifty consecutive cases of pneumonia treated with quinine without a death. Abstracts of four of his case reports relative to his dosage of quinine are herein presented.

Case one: Eighteen hours after onset of pneumonia, had 45 grains of quinine; one hour later, 30 grains; and four hours later, 20 grains, making a total of 95 grains within five hours.

Case two: Four days after taking ill, was given in one large dose 75 grains; one hour later, 40 grains; and four hours later, 40 grains, making a total of 155 grains in five hours.

Case three: A few hours after taking ill, was given 50 grains of quinine; one hour later, 30 grains; the next day, 35 grains; and one hour later, 20 grains, making a total of 135 grains inside of twenty-four hours.

Case four: A case with double pneumonia, seen two days after onset of disease, was given 50 grains of quinine; one hour later, 30 grains; and the next day, 35 grains, making a total of 115 grains within the course of 24 hours.

Galbraith was of the opinion that quinine is a heart stimulent. He says that he had no unfavorable symptoms in using quinine even in the large amounts.

The cases reported by him terminated apparently by slow lysis.

I began using the quinine in 15 to 20 grain doses, at intervals of two to four hours, until the desired effect was obtained or until demonstrated that no good was likely. There was unquestionably, in many cases at least, a decidedly beneficial effect.

That winter was a severely cold winter with changeable temperature and there were many severe colds. I began using the quinine for colds as well as for pneumonia and found that it seemed to act equally as well with many cases of colds as in pneumonia.

So impressed was I with the results that when I went back to St. Louis I began a series of experiments to ascertain what effect quinine had upon pneumococci. I tested 67 strains of pneumococci, i. e., pneumococci obtained from 67 different patients with various types of the infection. All were found highly susceptible to quinine.

Controls were run with other organisms such as typhoid bacilli, staphylococci, streptococci, colon bacilli, and so forth; these bacteria were not noticeably influenced in their growth by quinine. It even seemed that typhoid bacilli might grow a shade better with the quinine than without it.

The plan of the experiments was as follows: Broth medium was prepared and to one-half of it was added quinine to give the medium a concentration of one-tenth of one per cent of quinine. Both media were made to have the same reaction. A broth culture of pneumococci was shaken and from it two loops were placed in one or two tubes of plain broth and one or two tubes of quinine broth. These tubes were then shaken and two loops of broth from each were placed in melted agar medium which was at once plated. This was repeated in one hour and in two and three hours, and often at later periods. At the end of 12 to 24 hours of incubation the plates were examined and the number of colonies counted or carefully estimated.

A few average protocols of the experiments selected from the hundreds which were done are as follows: (The name following the date is the name of the patient from whom the pneumococci were obtained.)

Inst. Plates	One Hr. Plates	Three Hr. Plates
April 28, 1911, Sparks		
400	2,000	5,000
300	200	0
May 4, 1911. Hei.		
2,000	100,000	100,000
2,000	500	2
2,000	500	4
May 4, 1911. Seel		
10,000	30,000	100,000
10,000	2,000	18
10,000	30,000	100,000
10,000	2,000	60
May 15, 1911. Connors		
10,000	10,000	50,000
10,000	0	0
10,000	10,000	50,000
10,000	1	0
May 19, 1911. Hamm.		
5,000	10,000	50,000
5,000	2,000	500
5,000	10,000	50,000
5,000	2,000	500
May 19, 1911. Easly.		
5,000	10,000	50,000
5,000	2,000	500
5,000	10,000	50,000
5,000	2,000	500

May 26, 1911. Mark.		
10,000	30,000	50,000
10,000	2,000	200
10,000	30,000	50,000
10,000	2,000	200
June 1, 1911. Conners. Media—.5.		
2,000	5,000	10,000
2,000	50	0
2,500	5,000	10,000
3,000	200	0
June 8, 1911. Connors. Media—1.5		
2,000	5,000	10,000
2,000	1,000	0
2,500	5,000	10,000
3,000	10	0

Inst. Plates	1 hr. Plates	2-hr. Plates	3-hr. Plates
June 27, 1911. No. 311, Rosenow. Media .5			
200	600	1,000	3,000
200	200	200	200
June 27, 1911. No. 79, Rosenow.			
200	4,000	10,000	10,000
200	200	50	10
June 27, 1911. No. 549, Rosenow			
500	8,000	10,000	10,000
500	2,500	2,500	2,500
July 1, 1911. No. 556			
3,000	5,000	5,000	0
3,000	5,000	2,000	0
July 1, 1911. No. 79			
2,000	3,000	Contamination?	1,000
2,000	5,000	Contamination?	0
July 1, 1911. No. 594			
5,000	15,000	0	0
5,000	2,000	0	0
July 29, 1911. No. 509			
10,000	8,000	16,000	30,000
10,000	5,000	4,000	3,000
July 29, 1911. No. 546.			
5,000	10,000	20,000	50,000
5,000	2,500	2,000	1,000

It will be observed from the protocols given above that pneumococci in the first nine experiments given are readily killed by quinine. In the Hamm and Easly cultures, and to a less extent in the Mark culture, the pneumococci were less susceptible to quinine than in all the other experiments with fresh cultures of pneumococci; but even with these the deterrent effect of quinine was marked. In the 46 cultures of pneumococci which I isolated from that many patients, none were more resistant to the effect of the quinine than were the Hamm, Easly and Mark cultures.

The cultures which were supplied me by Dr. Rosenow were several years of age and many of them nearly extinct because of the dried-up condition of the culture media. As probably was to be expected, these organisms proved more resistant to the quinine than were the fresh cultures. There was, however, as will be observed from the protocols, a marked deterrent action to the growth of these pneumococci, by quinine. Several of these old cultures behaved in a way which was impossible at that time for me to understand; occasionally, even without the quinine, after some hours there would be a disappearance of all growths. This was before the day of bacteriophages and no doubt I was dealing with bacteriophages in certain of the old cultures.

I did a considerable number of experiments to ascertain if there was any difference in the action of quinine when used as a pure alkaloid and used as one of the other salts of quinine. There was no great difference; there seemed to be a slight advantage in favor of the pure alkaloid of quinine. It goes without saying that these solutions were made up so that there would be the same percentage of alkaloid of quinine in each group of experiments.

A considerable series of experiments were done to ascertain if the reactions of the culture media had any decided influence upon the growth of pneumoccoci. The protocols showing dates of June 1st and June 8th show that the media within certain limits had no influence upon the growth of pneumococci.

I have used quinine in literally hundreds of cases with respiratory tract infection. In a good percentage of these there is a prompt and undoubtedly beneficial effect from the quinine; in others, there is little or no effect. In most cases of typical lobar pneumonia where I have given quinine early and in large doses, there has been usually a great improvement noticed within a few hours. The temperature falls, and the patient develops a feeling of well being, except for the cinchonism, which is usually not a serious factor. The signs of congestion and consolidation rapidly disappear when the treatment is begun early in the disease, and the entire progress of the disease is checked. This has happened too often in my experience for it to be explained simply as an early crisis.

In a case now and then, if the quinine is discontinued at this stage, there will come a second congestion of the lungs and the quinine must needs be repeated. I think of this sort of case as being analagous to the test tube experiment done on May 19, 1911, with the Easly culture, in which there were 500 pneumococci, in the quinine tube, still alive after a three-hour exposure to the quinine. Theoretically, at least, when two loops of culture medium contained 500 live organisms, the organism if removed from the presence of quinine would likely begin to grow and in a patient might overwhelm him rapidly. For this reason the quinine should not be discontinued too early.

Even though the patient is not seen until pneumonia has well developed, the general toxicity evidence of the disease is often ear-

ly controlled by the quinine; resolution is speeded more than would be expected under a normal lysis. My experience teaches me, I repeat, that the quinine should be continued for a considerable period of time.

I commonly use the pure alkaloid for mouth administration. I have it put up in five-grain capsules and I give one capsule each hour until four or more doses are taken, and then continue one dose every four hours until a decided, or no, effect is well established. I have used the quinine dihydrochloride as an intramuscular injection, with satisfactory results. For children I use the quinine in a chocolate mixture.

I cite the record of one patient who was desperately ill with pneumonia of several days' standing; temperature was 105 degrees with patient wrapped in ice sheets, respiration was rapid, pulse was frequent and delirium was extreme; death appeared to be imminent. She was given dihydrochloride of quinine in 15 grain doses intramuscularly at intervals of a few hours until she had 105 grains. She recovered with miraculous rapidity we believed, from the quinine.

Another case: A child, six years of age, when first seen had what appeared to be a severe cold; she was given sodium benzoate and seen 12 hours later without any apparent improvement. The dosage of the benzoate was doubled and she was seen about 10 hours later, with definite upper lobe pneumonia. The dosage of sodium benzoate was again increased and she was seen four hours later. The area of pneumonia was increased; she was given quinine in a cocoa preparation, in fair sized doses, in place of sodium benzoate, and she was seen about eight hours later. She was a different-appearing child; she no longer appeared desperately ill; the area of pneumonia was decidedly decreased. She was seen 12 hours later and she appeared to be well and the area of pneumonia was difficult or practically impossible to find She made a most satisfactory recovery within the next few days the quinine being continued in small doses.

Dr. Kolmer[2], some years after my experiments were 'done and a preliminary report' of them given, had results in experiments with ethyl hydrocuprein hydrochloride which confirmed my findings.

I might report a long series of these cases after 23 years' use of quinine, but they would not be as convincing as the statement that my conclusion, after the treatment of hundreds and hundreds of cases with quinine, is that quinine should be tried in all cases of frank lobar pneumonia, in bronchial pneumonia and in most cases of acute or even of chronic infection of the upper respiratory tract, unless there is an idiosyncrasy to quinine or some other good reason for not using it.

In the last decade, especially in Germany, there has accumulated a considerable literature testifying indisputably to the value of quinine in pneumococcic disease. For the most part they have used a proprietary preparation combining quinine and camphor in volatile oil for intramuscular injections. At first they used quinine hydrochloride with urethane for intramuscular injections. I have not used combinations of quinine and camphor until lately but on theoretical grounds it has not seemed to me to offer advantages to the pure alkaloid of quinine, by mouth. I have, however, used quinine dihydrochloride for intramuscular injections with satisfaction, though it is moderately painful.

The Germans have used quinine, however, for a number of conditions which I have not attempted to treat with it. They have used it in lobar, postoperative, hypostatic and bronchial, pneumonia; suppurative lung processes; pulmonary tuberculosis; asthma; bronchiectasis; bronchitis; influenza, and colds.

Dr. C. E. Cahn-Bronner[4] began using quinine in 1923 and gives credit to Professor Aufrecht[5] of Magdeburg for recognizing as early as the nineties that quinine had specific toxicity for pneumococci; he greatly reduced his pneumonia mortality by its use. Cahn-Bronner confirmed Aufrecht's claims and found that quinine was often effective in croupous pneumonia. He says that so many remedies have been recommended for pneumonia without positive proof of benefit, and quinine is such an old, old drug, that a natural doubt has been aroused as to the value of quinine in pneumonia. It has been his opinion that the good effect of quinine in pneumonia is dependent upon parenteral introduction. He says that parenteral injections create a depot of quinine in the body. The inflamed lung contains quinine in higher concentration than that in the blood. Others cofirm his opinion.

Gaza and Braudi[6] studied pain from the injections of various quinine salts and found that the pain was in direct proportion to the hydrogen ion concentration. A solution with a pH of 7.2 was best adapted. This led to the preparation of quinine and camphor in volatile oils.

Harlan F. Newton and Kurt Heine[7] describe the preparation which has been generally used by the Germans for intramuscular injection as a sterile solution of .03 Gm. basic quinine and .025 Gm. camphor in

one c.c. of aromatic oils. It is held by certain observers that there may be slight virtue in the oils due to the phenols and terpenes which they contain. These authors report that chronic pulmonary phthisis may be much benefited by the use of quinine. Their best results were obtained in certain cases by combining tuberculin and quinine.

Flewelling[8], of America, is of the opinion that camphor and volatile oils at least facilitate the solubility of the insoluble quinine if they do not act as adjuvants to the quinine.

L. H. Van Del Velde[9] reports that the use of quinine reduced his death rate in pneumonia from about 25 per cent to 5 to 6 per cent.

Alfred Alker and Edward Woldmann[10] report excellent results in the treatment of bronchitis, bronchiectasis, and tuberculosis. He reports one bronchiectatic case restored to practically full capacity for work by injections of the combination of quinine and camphor in oils. Consumptive patients uniformly had their temperature and sputum reduced.

W. Loercher[11] used quinine in postoperative pneumonia and febrile postoperative bronchitis, with excellent results. He speaks of the danger of discontinuing the quinine too early in the course of treatment.

S. Butenwieser and A. Reuter[12] found quinine effective against bronchiectasis, purulent bronchitis, and purulent bronchopneumonia. There was marked diminution of the copious sputum and of the fever. In over 500 injections they had not one untoward result.

Kurt Radicke[13] says, that if the circulation can be rendered normal, injections of the quinine and camphor compound rapidly removes the congestive bronchitis, and makes emphysemic patients feel much better. The drug is indicated in certain infectious cases of asthma and good results may be expected from it. In pneumonia in children he reports good results in all cases. In bronchitis with measles he also obtained good results. He also noticed that rhinitis and conjunctivitis were not so frequent nor so violent when quinine was used as when it was not.

Gunther Wolff[14] used the quinine camphor preparation in 100 cases of bronchitis after other treatments had failed; in only 10 per cent did he not get excellent results. General catarrhal symptoms were greatly improved. If treatment is to be successful, good results will be apparent, he says, after the first few injections; the patients' tasting the medicine promptly is a good sign.

Joseph Poras[15] thinks quinine and camphor in volatile oils is of high value in the treatment of the mixed catarrhal infection of pulmonary tuberculosis.

Others who have written upon the advantageous use of quinine and camphor in volatile oils in respiratory infections are Gutzeit[16], Wintz[17], Von Bergmann,[18], Niessen[19], Iwahoff[20], Ballman[21], Rossius[22], Hofbauer[23], Davos Wolfer[24], Muller-Deham[25], Schott[26], Bottner[27], v. d. Velden[28], Yamada[29], Pur[30], Weinberger[31], Kirsch-Hoffer[32], Radicke[33], Brauer[34], Jung[35], Scholten[36], Papellier[37], Deckert[38], Quednau[39], Lazaroff[40], Duken[41], Schierge[42] Strisower[43], Gorl[44], Hegler[45], Deicher[46], Lust[47], Matousek[48], Scholz[49], Fleckseder[50], Saphra[51], Krech[52] and Berger[53].

Their testimony is almost universally to the effect that quinine is beneficial in respiratory tract infections.

Hummelet[54], Selhausen[55] and Naucke[56], have had success with quinine in veterinary practice for respiratory tract infections.

F. B. Cross[57] summarizes the work upon various quinine derivatives in pulmonary affections and quotes from Solis-Cohen, Kolmer and Heist; these workers found that ethylhydrocupreine hydrochloride in 1/40,000 solution causes destruction of pneumococci, whereas other quinine preparations in 1/4000 to 1/7000 causes death of the pneumococci. Those who have written upon the value of ethylhydrocupreine are Morgenroth and Levy[58], Moore[59], Kolmer[60], Idzumi and Kolmer[61] and others.

Ethylhydrocupreine (numoquin or optochine) evidently has sufficient pneumococcidal effect but it is highly toxic, causing amblyopia, permanent contraction of visual fields and even blindness.

The ethylhydrocupreine hydrochloride seems to have no advantage over quinine except its higher toxicity for pneumococci and this is offset by its increased toxitity for the patient.

SUMMARY

Quinine has a high specific toxicity for pneumococci.

This is proved by hundreds of test tube experiments. Sample protocols are given in the text.

My own experience in the clinical use of quinine in the treatment of pneumococcic disease has been highly satisfactory. A few typical case reports are given.

Aufrect of Europe and Galbraith of America seem to be the original advocates of quinine in the treatment of pneumonia. A few case reports showing Galbraith's method of using quinine are given.

The German literature has numerous reports testifying to the good results obtained in various respiratory tract infections.

They evidently have not believed it will destroy pneumococci.

Ethylhydrocupreine is more toxic to pneumococci than is quinine and also far more toxic to the host.

The Germans held that quinine has a superior action when administered intramuscularly to that when given by mouth. They use a mixture of quinine with camphor and volatile oils.

I have used quinine both by intramuscular injection and by mouth and I think there is no great difference in the efficiency of the two methods.

Administration of large doses of quinine gives occasional uncomfortable pharmacologic effects; but these need cause no worry. It should be explained to the patient, however, that the large doses of quinine and the rapid killing of a large number of bacteria in his body may be expected to make him feel ill.

From the experience of the Germans, in combination with my own, I believe that one should try quinine in most cases of lobar, bronchial and postoperative pneumonia, in bronchiectasis, pulmonary phthisis and abscess, sinusitis, rhinitis and other types of upper respiratory tract infection.

In the event that pneumococci are in no wise concerned in the process for which the quinine is being administered, I should expect it to be of no efficacy.

Whether the compound of quinine, camphor, and volatile oils, intramuscularly has virtue over the alkaloid of quinine orally or the dihydrochloride intramuscularly, I am unable to say.

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HIGHLIGHTS OF THE BRITISH MEDICAL ASSOCIATION

DUDLY FOURNIER, M.D.
Phoenix, Arizona

(Read before the Maricopa County Medical Society, Sept. 15, 1930.)

The meeting of the British Medical Association was held in Winnipeg, Manitoba, from Aug. 23 to Aug. 29, 1930. There was a registration of over 3000 doctors from the United States, Canada and Great Britain. There were many famous men from across the Atlantic. Lord Dawson, of Penn, the King's physician during his last illness, was probably the best known.

The first paper of interest was one on coronary thrombosis and angina pectoris, by John Parkinson, of London. His opinion is that patients suffering with angina are not suffering with heart disease, but from arterial disease, and that it is a particular form of arterial sclerosis. Usually the heart findings are negative. X-ray examination of the aorta should always be done, as atheroma of the aorta is easily distinguished, and is practically always present in angina.

In cardiac thrombosis he said, "We were looking on a case of cardiac infarct. The pain was always directly behind the sternum. In one third of these cases electrocardiogram showed nothing, and in two-thirds of the cases the change shown was diagnostic." The tracing showed what he called a plateau, and this plateau followed by a T inversion is characteristic of coronary thrombosis. Prognosis, he said, is grave if failure follows coronary thrombosis. "The treatment consists of six weeks in bed, and a change of the patient's mode of living. If it is necessary, we must be prepared to frighten the patient some." The drug treatment is simple. Plenty of morphine, and avoidance of amyl-nitrate. We should strive to diagnose the milder cases. They usually give a history of an attack of indigestion, and this has usually been a mild attack of thrombosis. The electrocardiogram is a great help in diagnosing these mild cases.

Dr. Donald Patterson read a paper on celiac disease and pyloric stenosis. In celiac disease he advocated a high-protein, low-fat diet. The metabolism of carbohydrates is now being intensively studied in this disease. He said that bananas and glucose are well tolerated, but starches are not. The gastric contents show an absence of Hcl. For this reason 10 to 30 minims of dilute HCl should be admniistered three times a day.

In pyloric stenosis, Rammstedt's operation holds out the best chance of success, but the baby should be operated on early, as after eight to ten weeks the mortality rate is very high.

Dr. Robert Hutchison, of London, gave a very interesting talk on the pursuit of health. Said he, "The old anxiety about health may show itself in one of three ways." First, the diet-faddists were condemned as the most malignant of all. One swears by whole-wheat bread, another by sour milk. Vegetarianism is the onlv road to salvation in the eyes of some. Others insist on eating only raw vegetables. And others are crazy about vitamins and roughage. The scientific truth about all this diet business, he said, could be put briefly. Eat moderately, taking an ordinary mixed diet, and don't worry about anything else. As to calories, our appetite is given to us to tell us how much food we need and our health is usually a trustworthy guide. Leave raw vegetables to herbivorous animals and let the vitamins look after themselves. Investigation has shown that there is no real merit in whole-wheat bread as opposed to white bread but he advised not to scrape your insides with much roughage as it is likely to do more harm than good. He said to remember that fruit, though a pleasing addition to the diet, is not very nourishing, and that milk is both bulky and bilious; that vegetarianism is especially unsuitable for children and sedentary workers; and that few diseases are either caused or cured by diet alone.

The second type of anxiety is overanxiety about others. The fuss begins at or before birth and is continued throughout childhood. The rearing of an infant requires the combined knowledge of a chemist, a psychologist and a public officer of health and it is far from certain that the children of today are healthier or happier than their predecessors of a more careless generation. There is no doubt that the atmosphere of fuss and anxiety in which so many children are raised reacts on them unfavorably with the result that nervous troubles are commoner today in childhood than ever before. He said children should be allowed to get the infectious diseases when they are young as they are far less serious then than when contracted in adult life. Dr. Hutchison is apparently not in favor of periodical health examinations, for this, in part, is what he said: There has lately been a movement in favor of periodical medical examinations. The idea is that diseases may be detected in their early stages and be corrected before they have gone too far. That this would happen sometimes can not be doubted; but there can be equally little doubt that most of the defects which such examination would re-

veal, the patient had better know nothing about, as it is wonderful how the machine gets along if one does not worry too much about it. Dr. Hutchison said that he believed that most health propaganda is based on two fallacies: one, that health is difficult to attain and keep; and the other, that can be got by following certain rules. There are no rules which apply to every individual.

In the symposium on the uses of radium and surgery, Dr. Malcolm Donaldson, of London, said there is reason to hope that surgical operations for cancer will be abolished altogether by the use of radium, and he told of his own method of treating the glands involved in cancer by means of a direct application after an abdominal section operation. A week later, the operation is repeated to remove the cancer. The drawback to this is that it involves two operations within a week.

Dr. W. W. Chipman, of Montreal, declared that the records of most of the large clinics of the world have shown that radium has cured 20 per cent of all cases treated for carcinoma of the cervix, saying that radium is the only effective teratment for cancer in the most advanced stages, and even in the early stages it shows a superiority over the operative method. Professor Chipman warned that only highly trained experts should handle radium and said that it was unwise for any doctor to attempt to use it. He believed that, when the cause of cancer is known, it will be realized that surgery is not the cure. He declared that the best surgery can do is not equal to present-day radium results. Dr. Chipman declared that in uterine hemorrhage radium is a therapeutic blessing. There was a lot of discussion over these papers and much handclapping and feet-stamping when Dr. Gordon Luker, of London, arose and said that after numerour experiments with radium he has discarded the treatment in favor of the knife and radical surgery.

Professor Archibald, of Montreal, gave an address on the scope of thoracic surgery. At present he said that the best work is being done by the general surgeon but there has to be good teamwork. In Montreal the Surgical Thoracic Clinics were definitely organized and reached their decisions only after the fullest discussion. Dr. Archibald said that teamwork is of the greatest value and is, in fact, a necessity. He cited the results of 275 cases treated in the Montreal Hospital. No operations were attempted without a thorough examination of the patient's scars, to determine resistance and recuperative powers.

Professor Collip, of McGill, who was a coworker of Banting in the discovery of insulin, took a prominent part in the program. He has recently isolated two substances: one is the secretion from the parathyroid glands which, when injected, will bring about speedy improvement in cases of low calcium conditions in the body. He said there is an interrelation between the parathyroid hormone and vitamin D. The other substance recently discovered is a placental hormone which he has called emmernine. This substance is given by mouth and exerts a remarkable effect in cases of dysmenorrhea, menorrhagia, metorrhagia. He stated that the placenta stores up hormones in the ovary.

Before closing, I want to tell you of one more subject—that on Psychic Research, by T. Glenn Hamilton, of Winnipeg. But for the convincing way and the apparent truthfulness in which he put the subject over, one would be inclined to believe it all a fake. Dr. Hamilton showed photographs taken during these experiments. Some of them he indicated might appear ridiculous but their genuineness had been sought in every possible manner. He had taken all the precautions he could devise against fraud, mistake and even deception. He gave an account of his experiments through mediums. These were human subjects who could place themselves in a passive condition, generally in deep trance, enabling a peculiar force to be used for the production of various phenomena. One of these phenomena he called telekinesis, which was the movement of objects at a distance from the medium and without any visible contact. He showed actual photographs of tables and chairs suspended in mid-air presumably by this force called telekinesis. He showed other photographs of a mass of ectoplasm protruding from mouth, eyes and ears of other mediums and some of this ectoplasm had photographs of faces within. It was all very pretty and marvelous but a bit hard for me to swallow.

CASE REPORTS

(Good Samaritan Hospital Staff Meeting)

Intussusception

Robt. T. Franklin, M. D.

Boy, age 16, came to my office the morning of March 14th, complaining of a pain in the abdomen—more marked in the lower right quadrant. This pain had developed the preceding afternoon and was accompanied by nausea and vomiting. Temperature at that time was 99 and a fraction. No masses could be palpated and a diagnosis of acute appendix was made. White blood count at that time was 13,600.

The child was immediately taken to the hospital. Under spinal anesthesia, operation was performed by Dr. Leff and myself. Rectus incision was made.

and appendix appeared normal; but a large mass was found in the cecum which proved to be a mass of intussuscepted ileum. We were unable to reduce this mass, and opening was made in head of cecum after area was well packed with lysol sponges. The mass delivered from the cecum was necrotic and foul-smelling. It was tied off and removed; then an end to end anastomosis was made, and opening in cecum was closed. Abdomen was closed with a cigaret drain. Operation took longer than was expected, so it was necessary to complete the closure under ether.

The patient ran the usual train of symptoms of localized peritonitis. Temperature gradually subsided. Drainage was free until April 2nd, when it became scarce. Simultaneously, temperature again made a rise. At this stage, Dr. Raney was asked to see the patient in consultation. Dr. Kicklighter had previously attempted to reopen the drainage sinus with hemostat, but was unable to get any more drainage. Dr. Raney suggested that we watch patient for a day or two to see if drainage would not start. We also considered the possibility, at that time, of a subphrenic abscess but symptoms were not suggestive.

Drainage started a day or two later, and temperature dropped. Patient continued to improve. Drainage gradually decreased. On April 11th, temperature again rose, and patient became markedly jaundiced. Careful inquiry into previous history showed that the patient had had similar attacks of jaundice without any hepatic or gallbladder pain. This cleared up under salines, and patient is now walking around with no drainage, and incision is almost entirely healed.

Discussion

Willard Smith, M.D.

Dr. Jordan has asked me to discuss this very interesting case of Dr. Franklin's. Inasmuch as the case was still in the hospital when this request was made, I did not review the case history until after I had secured permission from Dr. Franklin, which is in accordance with a certain regulation recently enacted by the staff.

This lad is 16 years old. The historian informed me that he had been considered as a pediatric case. This brings up the question as to where pediatrics ends. I take it that the young man must have been under-developed not to have reached puberty at the age of 16, and this mught have some diagnostic significance, if such is the case.

Intussusception seems to be peculiarly a condition which obtains in childhood or infancy and is very rare in the adult. The symptoms as stated on the chart could not well have been interpreted in any other way than to assume that the patient had an acute abdomen. These symptoms also pointed very definitely to its being acute appendicitis. The fact that it was acute, and that it had all the earmarks of acute appendicitis, entirely justified the diagnosis and the treatment instituted—namely, laparotomy. Whenever an abdomen is opened, the surgeon must be prepared to meet any possible intra-abdominal lesion and deal with it correctly on the spur of the moment. This demands concentration, which of necessity takes a good deal out of the operator. The custom of having the operative notes recorded immediately after the operation is completed is rather unfair to the surgeon, for he should have time to react from the operative strain and become adapted to the shift from his proper function as a surgeon to his vicarious literary function. I mention this because the chart says the intussusception involved six inches of ileum; when Dr. Jordan called me up, he spoke of eight inches of ileum, and when I spoke to Dr. Franklin, he mentioned eighteen inches of ileum. The point is, however, that Dr. Franklin dealt with the emergency exactly as he should and with a very happy result. Too often this class of case does not survive. Dr. Franklin is to be congratulated upon having secured so excellent a result. The fact that infection appeared and the patient became septic some seventeen days after the operation, is just part of the luck of the game. The fact that the complication was weathered and the patient reacted in a very few days and went on to recovery, shows that the emergency was intelligently met. I think the doctor deserves to be congratulated upon his good work.

Another question which this case history brings up is a practical one regarding statistical filing. On the first page of the case history is a space for diagnosis. In one hospital the rule is made that this space must be filled the first day the patient is in the hospital. I believe it is the custom in this hospital to have this filled in when the true diagnosis becomes certain. The latter course strikes me as being the better course. The object of records is to record facts, not speculations, and while it is interesting to note the variations between the preliminary and the proved diagnosis, this is not the object of hospital statistics. I thoroughly approve of the custom which prevails in this hospital. I would even go farther and say that this particular space should not be filled until the day the patient leaves the hospital.

Asthma-Bronchopneumonia in Infant

Walter P. Sherrill, M.D.

This case is that of a sixteen-day-old baby. It was a full-term baby, normal delivery and had been fed on Eagle Brand milk every three hours. The family history was negative with the exception that the mother was subject to severe attacks of urticaria. The child was first brought to the office on March 27th, was well nourished, weighing 8 pounds and 15 ounces. The respiratory rate was 40 to 50, and the rectal temperature 99. The respirations were labored, expiration long and difficult. There were innumerable bronchi and wheezes throughout both lungs. The rest of the physical examination was negative. Two injections of adrenalin, 1½ minims each, were given with a fifteen-minute interval. The respiration returned to normal, and the child was taken home. The mother returned the next morning with the child, which was in almost idenitcal condition as on the preceding morning. The temperature was still normal and the adrenalin was repeated, with immediate relief of symptoms. The mother returned the following morning for the third time with the child and said that it had been perfectly well until the early morning hours, when its symptoms returned. The adrenalin was repeated with some results and the mother instructed to remove the child from its environment, as the removal of suspicious objects had proved of no avail. She decided to take the child to her mother's at Gila Bend and left that afternoon. She stated that the child remained well there until the following morning, when its symptoms returned and it had a convulsion. A local physician was called in and told them that the child was in a very critical condition and should be returned to Phoenix at once. This was done Monday morning, the child having had many convulsions in

the meantime. On its arrival in Phoenix the child was having convulsions and was extremely cyanotic. Oxygen was administered and after two or three hours the color showed marked improvement. Respiration stopped several times during the first afternoon of its admission, artificial respiration and oxygen and adrenalin being administered. Its temperature up to this time had been less than 100 degrees by rectum.

The child remained in the hospital for seven days. During the week it continued to have convulsions at frequent intervals and on several occasions respiration stopped. The cyanosis was of such a type as to suggest a patent foramen ovale. On the third day in the hospital the child developed fever, its respiration increased from 60 to 70 and physical signs of pneumonia developed.

The child died on the seventh day after admission.

CASE REPORT
(Occlusion of Superior Mesenteric Artery)

(Reported at the Staff Conference of St Joseph's Hospital, Phoenix, Arizona, Feb. 9, 1931).

Report of Case by Dr. Howell Randolph

Mrs. A.R., age 63, housewife. First admission Oct. 31. Chief complaint, shortness of breath and swelling of the ankles.

F. H. One daughter dead tuberculosis. Three children living and well.

P. H. Eighteen years ago left leg swollen from "varicose veins," no physician called. Thirteen years ago had a goiter. No treatment. No rheumatic fever or tonsillitis. No operations. Average weight 170 to 180; present weight 170.

P. I.: Patient had always been very well until about four years ago when she first noticed a slight swelling of the ankles, and a little shortness of breath on exertion. In May this year she had an increase in swelling of the legs, chiefly the left. not painful. Did not feel very bad until about the first of July when the dyspnea became much more marked and she consulted a physician who started her on digitalis. Was in bed for three weeks; improved and was up around until the latter part of September, when she had an attack of acute indigestion, with nausea and vomiting. She was unable to keep food down for several days and she discontinued the digitalis thinking it was responsible for the illness; was taking about 30 drops every three hours previous to this attack. Since this time she had not taken any digitalis. There has been a slight hacking non-productive cough for many years, and at the time of admission was nauseated to the point where a coughing spell would cause vomiting. At times there has been a very small amount of frothy sputum. A few weeks before admission she had had an attack of sharp pain in the epigastrium, associated with the vomiting.

During the past few months she has lost a great deal in strength and thinks she has lost considerable weight. The heart has been irregular for a long time she cannot say just how long but several years.

P. E.: Temp. normal; pulse 140, counted at heart, totally irregular. A large woman who has evidently lost a little weight. The skin is somewhat wrinkled as from loss of subcutaneous fat. Still moderately obese. Lower teeth out except for one broken tooth, nine upper teeth very carious. Tonsils show comedo formation, pus can be expressed from them. They are rather small and scarred. Heart enlarged to the left; totally irregular. There is a suggestive soft systolic murmur to left of sternum, not easily heard at times because of rapid beat. Abdomen is flabby and pendulous. No masses or tenderness. Slight swelling of the right ankle—pitting edema. Diagnosis: Auricular fibrillation, cardiac decompensation.

Patient was in the hospital eighteen days. During that time her heart slowed to between 90 and 100. The pulse deficit which had been up to 70 or 80 dropped to about 10. Digitalis was administered starting with six grains of the extract daily and reducing it to 3 grains daily at time of discharge. The stomach symptoms entirely cleared up under bland diet and mild catharsis. Four teeth were extracted on the tenth day and five on the fourteenth day of her stay. She was discharged in excellent condition on the eighteenth day.

One week later telephone conversation reported her to be feeling better than she had for many months. That night however at 10:30, I was told over the 'phone that she had waked up feling nauseated and had vomited soon after. She was given an enema, but there was no relief and at 3 in the morning she was readmitted to the hospital, complaining of very severe constant pain over the entire abdomen. She had vomited twice, was very weak and in a state of shock. She had groaned continuously with severe pain for several hours. The enema which had been given was returned with a small amount of fecal material

Examination at that time showed a very sick woman with pale face and cold extremities. She was groaning with pain which she indicated to be over the entire abdomen, especially the epigastrium, and the left lower quadrant. Respiration was full and deep but patient wished to be propped up on pillows. Pupils normal. Instead of the total arrhythmia which had been present, the beats were regular for half a minute or so at about 150, then would slow to 80 or 90 and would become very irregular, then speed up again. Pulse very difficult to palpate at the wrist. Abdomen moderately distended and markedly tender in the upper abdomen especially and over the entire abdomen on light pressure.

Impression: Coronary thrombosis and possible mesenteric thrombosis.

At 8 a. m. condition was about the same, no vomiting or nausea. Distention had increased and tenderness seemed more marked. Absence of pain in precordium made coronary thrombosis seem unlikely. Patient's general condition was such that it was considered out of the question to operate for mesenteric thrombosis.

Consultation note by Dr. White in the afternoon was as follows: "Onset about 10:30 p. m. with very severe generalized abdominal pain followed by nausea and vomiting. Pain persistent and partially relieved with morphine. Gradual distention of the abdomen. No bowel movement or passage of gas since taking enema following onset of pain. Rise in temp. this afternoon. Exam. critically ill. Shock. Heart fibrillating and tones poor. Abdomen distended and tender. Impression: Mesenteric embolus. Embolic origin from heart."

9 p. m. Patient seen by Dr. Palmer who concurred in the diagnosis. Patient failing rapidly. Practically pulseless. Over the heart, beats counted 10. Stuporous. Respiration shallow and difficult. Abdomen more distended and tense. Died at 12:30 the next morning.

Autopsy Report by Dr. H. P. Mills

The body is that of a well developed, well nourished female without external wounds or evidence of

injury. The abdomen was greatly distended and there was a large amount of subcutaneous fat. The chest and abdomen were opened.

The lungs were removed, showing no gross pathology and no pleural adhesions. The heart was moderately enlarged. Tricuspid valve much dilated, valve leaflets slightly sclerotic. The ventricle not dilated. Mitral valve showed moderate dilatation. Valve leaflets were greatly thickened but no recent vegetations. Left ventricle walls hypertrophied and muscle was pale in color and abnormally fibrous. Coronary arteries were thickened and somewhat sclerotic. Pulmonary and aortic valves showed no definite change. The entire thoracic and abdominal aorta showed advanced atheromatous lesions, the vessel walls being roughened by calcareous plaques, some of these with roughened and friable margins.

Stomach was dilated but otherwise was negative. The liver was reduced in size and showed evidence of atrophy and fatty degeneration. Kidneys were normal. Spleen was slightly enlarged, mottled in appearance with thickened capsule. On opening the abdomen a large quantity of dark bloody fluid was found in the peritoneal space and the entire small intestine and large bowel except the lower portion of the descending colon and sigmoid were dark in color and some areas almost black and very friable so that in lifting coils of the small bowel, rupture of the wall occurred. The abdominal aorta was opened and the superior mesenteric artery incised. Just proximal to the branching off of the colica media a firm clot was found filling the vessel and extending into this branch and into the more distal branches. Apparently the thrombosis was due to lodgment of fragment of atheromatous material from the aorta.

Anatomical Diagnosis:

Thrombosis, superior mesenteric artery with stasis and beginning necrosis of small intestine.

Extensive arteriosclerosis with degeneration of walls of thoracic and abdominal aorta.

Cardiac hypertrophy with insufficiency of mitral and tricuspid valves.

Chronic myocarditis with fibrosis and coronary sclerosis.

Discussion by Dr. John H. White

The signs and symptoms usually referable to the occurrence of occlusion of the superior mesenteric artery may not be well defined in a given patient. Other sources of information may need to be investigated to verify the possibility of an occlusion being present. An appreciation of the probability of an occlusion having occurred lies, I think, in an understanding of the types of pathology which may give rise to such an occurrence.

The most common source of pathology is the presence of mitral stenosis. The presence of a narrowed mitral orifice, associated with a dilated left auricle with or without the presence of auricular fibrillation, predisposes to the formation of mural thrombi from which an embolus may be broken off and projected into the systemic circulation. Another source of embolism from within the heart arises from the formation of a thrombus in the left ventricle. A thrombus may form in a dilated left ventricle as a result of retardation of blood flow in the ventricle. The presence of a patch of fibrosis on the endocardium of the left ventricle adds to the possibility of the occurrence of a thrombus. Occasionally a thrombus may form in the left ventricle adjacent to an area of necrotic endocardium following a thrombosis of one of the coronary arteries. Acute vegetative endocarditis of the mitral aortic valve may give rise to emboli which may occlude the superior mesenteric artery. Rarely it has been reported that an embolus has arisen in the right auricle and passed into the systemic circulation through a patent foraman ovale and there is one case on record when an embolus has arisen from the pulmonary veins and has been projected into the systemic circulation, in each instance with resultant occlusion of the superior mesenteric artery. The aorta may be a source of emboli which may occlude the superior mesenteric artery. A calcareous plaque may become loosened at the site of a calcareous atheromatous area in the intima or a thrombus may occur in situ at such an area and become loosened forming an embolus. The same types of change may occur in the superior mesenteric artery itself and in addition this artery may become occluded by the occurrence of a dissecting aneurism in the vessel wall. Occasionally, occlusion of the superior mesenteric artery may occur from an embolus which has broken off from a thrombus in an aortic aneurism.

In this patient, the presumption of the presence of mesenteric artery occlusion was helped by the fact that she had a dilated left auricle which was fibrillating and from which it could have been possible for an embolus to have arisen.

It is interesting to note, however, that at autopsy the heart was not the source of the embolus. Apparently the occlusion of the superior mesenteric artery was caused by the formation of a thrombus in situ at the site of a calcareous degenerative area in the intima.

The past history of this patient is interesting in view of the autopsy findings of arteriosclerosis of the superior mesenteric artery. She gave a history of attacks of indigestion occurring at irregular infrequent intervals during the past few years. These attacks were characterized by severe epigastric pain and associated with nausea and vomiting. These attacks lasted a few hours and left her apparently in no worse condition than she had previously been. There has been described a syndrome called intermittent claudication of the superior mesenteric artery which has, as its underlying pathology, arteriosclerosis. This syndrome is characterized by attacks of severe epigastric pain associated with nausea and vomiting, transient upper abdominal distention and constipation. These attacks usually come on several hours after a meal and last for a period of two to three hours. It could very well have been that this patient's attacks of "indigestion" were of the type described as occurring secondary to arteriosclerosis of the superior mesenteric artery.

ACUTE CRANIAL INJURIES
(Case Reports and Discussions)

(Before the monthly Staff Conference of St. Joseph's Hospital, Phoenix, Arizona).

Case Report

Charles N. Ploussard, M.D.

Case No. 18101. Adult white male, age 32. Patient entered hospital on stretcher. unconscious, very restless, continually counting numbers. Respirations labored. Somewhat cyanotic. Bleeding from laceration over left eye, with history of having been in auto accident 45 minutes before admission.

Physical examination:

Head: No hematomas or laceration of scalp. Laceration three inches long to skull over left eye. Pupils equal, regular, react to light. Contracted.

No nuystagmus or strabismus. No bleeding from ears, nose or mouth.

Chest: Heart, no gross pathology; rate 100. Lungs, respirations labored, some mucous rales, probably transmitted from throat.

Abdomen: No distention; no rigidity; no palpable masses.

Extremities: Negative.

Reflexes: No Babinski, Gordon, Oppenheim or Chaddock. K. K. equal and hyperactive. Cremasterics present.

Blood pressure, 1:30 p.m.: 116/78.

Diagnosis: Probable skull fracture. Lacerated eyebrow, left.

Treatment: Eye dressed, patient put to bed, given sedative, restrained. Antitetanic serum, 1500 units.

Progress Notes: Condition of patient did not change much during the first twenty-four hours. Given sodium luminal grains two, hypo as often as necessary to keep patient from being too restless. Blood Pressure readings:

Blood Pressure readings:		Pulse Rate
November 21, 1:30 p. m.	116/78	100
" 2:30 "	134/84	108
" 3:30 "	142/66	105
" 6:30 "	168/108	110
" 8:30 "	150/96	110
November 22, 9:00 a. m.	108/60	106
" 1:00 p. m.	122/82	112
" 6:00 "	130/90	120
November 23, 10:30 a. m.	130/92	110
November 24, 11:00 "	128/84	110

Respiration was labored throughout, but without any indication of Biot's breathing of increased intercranial pressure.

November 22nd. On next day after injury, paralysis developed in left side of body. Lumbar puncture done: 30 c.c. bloody fluid obtained, under only moderately increased pressure. Little change in patient following puncture. Due to his restlessness, it was necessary to give him a small amount of chloroform. At time of puncture, 100 c.c. of 25 per cent salt solution, with 100 c.c. of 50 per cent glucose, were given intravenously.

November 23rd. Lumbar puncture done again, no anesthesia necessary as patient was more quiet: 20 c. c. of bloody fluid obtained under slightly increased pressure. Glucose and hypertonic salt solution again given. Condition seemed to be more or less at a standstill. Ecchymosis around left eye with its clear-cut even line of demarcation is strongly suggestive of basal skull fracture.

November 24th. A. M. Condition not so good. Cyanosis deeper. Pulse rapid but blood pressure remains about the same. Glucose and hypertonic salt solution repeated. Temperature elevation noted as pulse became more rapid and weaker.

5:30 p. m. Cyanosis deeper, pulse imperceptible. Temperature 106 axillary. Respirations 60. Patient expired.

Discussion

J. H. Patterson, M.D.

We have here an adult male coming into the hospital unconscious, with a history of being in an automobile wreck, showing cerebral irritation, numerous contusions and abrasions about the head and body and a laceration over the right eye extending into the scalp hair-line.

X-ray does not show us anything, yet we have indications of a severe concussion and of pressure signs with contracted pupils and left-sided hemiplegia. The spinal fluid shows blood, I believe. With these signs, if there is a fracture, then it is probably at the base and located on the right side. The motor and sensory areas of the right brain are either bruised or there is edema or pressure of this side as indicated by the hemiplegia. This was a late development, making us think of a slow hemorrhage or edema of the brain due to the concussion. If it had been due to a compression fracture of the skull, this would have been gross enough to have shown up on the x-ray plate, I think, and we should have had pressure symptoms sooner.

Daily spinal puncture was done, I believe, although the hospital chart is not very clear or complete on this. His progress sheet is not complete nor are the various consultants explicit on their findings, impressions and treatment advised. Spinal puncture, sodium luminal, glucose and hypertonic saline were given. These are all well recognized steps.

In several cases of skull fracture that have come under my care and where there were pressure symptoms without evidence of compression of fragments (for then of course surgical intervention is indicated), I used the daily spinal puncture as long as there was any pressure at all. Also repeated intravenous injections of hypertonic saline, 80 to 100 c.c. of 20 to 25 per cent. I notice that 50 c.c. of 25 per cent saline was given once in this case. However there was no note of the effect it had, if any. I don't think that in my experience this is quite enough to be given to get any effect. Larger doses of a 20 per cent solution, repeated several times a day, would prove more effective. The effect of this saline is dehydration of the brain and return to normal of the blood chemistry by bringing up the blood chlorides and promoting the better elimination of urea and nonprotein nitrogen by the kidneys. One authority gives magnesium sulphate, 1½ oz. per mouth, 4 or 5 times a day, for the same effect. It is also given intravenously by some.

Glucose 50 per cent is used extensively, but personally I have never seen very much good effect from it. I have seen large doses of calomel given in skull fractures for the purpose of dehydration.

In full-blooded individuals in good health I see no contra-indications to blood letting to bring the blood pressure down to just below normal, thus reducing the intracranial pressure and edema of the brain.

Cushing advocates sub-temporal decompression in all fractures of the base of the skull, decompressing both sides. This procedure he claims is first of all exploratory, disclosing hemorrhage or oozing of any meningeal artery. Also, opening the dura enables us to evacuate any blood clot or fluid causing pressure and which would be a fertile field for bacteria. This prevents any recurrence of pressure after the wound is closed, there being a rubber dam in place if much fluid is present. If there is only edema of the brain, however, this is not necessary.

Urotropin given routinely in fractures of the skull was advised as early as 1909 by Crowe, of Johns Hopkins. He claimed that it rendered the cerebrospinal fluid bactericidal.

An additional aid to any treatment of basal fractures of the skull is putting the paitent in a dark, quiet room, to be kept on a low diet with strict attention to the bowels and kidneys. In addition, any sedative we may like in these cases.

One authority states that, in cases treated expectantly by him, 90 per cent were fatal and in

those in which surgical intervention was used, there was less than 35 per cent mortality.

Most of us look upon surgical intervention in head fractures without gross compression present as rather radical. However, it is done routinely by some of our surgeons.

Case Report

Loren C. Barlow, M.D.

D. M. Age 20. Entered hospital unconscious Jan. 18, 1:30 a. m. History of having been struck by an automobile knocking patient to pavement. Laceration two inches long over right temporal parietal region. Wound was closed with clips and patient sent to room. Pupils fixed. K. K. Present. No. clonus. No Babinski. Was called to see patient eight hours later. He was unconscious, breathing fast and labored. Paralysis of left side of body. Reflexes not indicated on this side. On right side reflexes were hyperactive, with no pathological toe signs. No blood coming from nose, mouth, or ear. Pulse about 70, good volume not thready. Temperature normal. Blood pressure 130/70. It looked so evident that there was certainly some increased pressure on the right side of the brain that immediate operation was advised. Spinal puncture not done. Through a right parietal "Y" shaped incision, the epicranial aponeurosis was incised and elevated. The cranial vault exposed. There was a fracture forming five fragments which were depressed about half an inch, the major portion of the most prominent depression being over the inferior anterior portion of the fissure of Rolando. The fragments were removed and the edges smoothed off with the rongeur forceps. The dura was incised. There was a rupture into the precentral convolution at the site of depression, the brain tissue being slightly lacerated. Exploration did not disclose any bony fragments within the substance of the brain. The terminal portion of the middle meningeal artery was ruptured and spurted into the wound. The ends were ligated and bleeding checked. The convolutoin and fissures were then explored. There was marked edema throughout with multiple petechial hemorrhages through the brain substance, edema and advanced beginning inflammatory reaction; the dura was incised in stellate fashion for decompression purposes and left open. Silk drain was inserted into wound, and wound closed in layers. Scalp wound connected with area directly over fracture. Following the operation the man never regained consciousness and had to be put in a straight jacket, but partial function of left side of body returned. Breathing continued labored, incontinence of feces and urine. He continued in about this codition until the fourth day when he expired.

The temperature steadily went up from the day of operation to 105.8 just before death. Respiration varied from 30 to 40. Blood pressure stayed around 120/70. Pulse from 90 to 120 with a white count on the day of operation of 20,200.

Autopsy: The body is that of a well nourished, very well developed powerful negro male apparently about twenty years of age.

There is a laceration "Y" shaped, in the right temporal parietal region which has been sutured. Palpation reveals no bony structure beneath.

The usual incision was made through the scalp, scalp retracted forward revealing an area free from bone in the right temporal parietal region of about 2 by 3 inches. Calvarium removed in usual manner, revealing no further fractures in the vault. The dura mater was removed, exposing brain substance beneath. In the right parietal lobe there were firm adherent clots as well as loose postmortem clots. About 2 cm. lateral to the longitudinal fissure in th.s area is an area of softening which when pressed admits the small finger deep into the brain substance. There is contrecoup hemorrhage of the left occipital region. This hemorrhage is fairly extensive and extends into the brain substance about an inch to inch and a half. Hemorrhage occurs for about three to three and a half inches deep into the right parietal lobes just anterior to the fissure of Sylvius. Removal of the dura mater and the remaining portion of the skull reveals thrombosis, firm and adherent, of the right lateral sinus. The middle meningeal artery is in the field and presents evidence of further bleeding. No fracture descernible at the base of the skull.

Anatomical Diagnosis: Excision of temporal parietal section of bone.

Ligation of middle meningeal artery.

Cerebral hemorrhage.

Subdural hemorrhage.

Contrecoup hemorrhage, left occipital region.

Discussion

R. B. Raney, M. D.

We are dealing here with a patient suffering from an acute brain injury, definitely such as manifested by the first symptom, namely shock, with evidence of localized injury from the physical findings of paralysis, on the right motor cortex. Supportive treatment was given during the first few hours, absolute rest and observation for the reactionary period of increasing intracranial pressure before attempting surgical interference. At the end of approximately eight hours the reaction from shock was sufficient to warrant surgical relief of pressure which, from the physical findings, was that of a depressed fracture, intracranial hemorrhage or laceration of brain substance itself. Had this patient been operated earlier, at any time during the phase of shock, there is no question that death would have only been hastened. We might here question the surgical judgment, were we dealing with an operable or an inoperable case. It is very easy for one to take the line of least resistance and say a condition is inoperable. Such logic, in a great many of these decisions, can be classified only as passing the buck to evade mortality. It is very true that a high mortality exists in surgical treatment of acute brain injury and we should either assume the responsibility or refer such cases to a colleague who will. For, even in the face of high mortality in such surgical procedure, a great many lives will be saved and a great many of the dreaded symptoms of headache, paralysis, personality changes, etc. will be avoided. The indications for surgical treatment of acute brain injuries are more readily described by giving the contraindications. The first contraindication for surgical interference is the period of shock. No benefit is gained by any operation with the patient in shock. In fact, the convalescence is made all the more laborious, and patients who survive such an operation at all would have gotten well anyway. At the end of the period of shock, definite inflammatory changes have taken place. The blood pressure which has been low, begins to elevate. The temperature, which has been subnormal, assumes the febrile curve. The pulse, which has been fast and thready and perhaps irregular, slows down to normal and, in a great many cases is markedly subnormal. Respiratory motion assumes shallow and

irregular characteristics even to the extreme Cheyne-Stokes type. It is during the beginning of this period that the greatest benefit can be derived from surgical treatment if indicated. Approximately thirty-three per cent of acute brain injuries are surgical; in the others the pressure can be controlled by spinal puncture, intravenous glucose and hypertonic saline. Hypertonic saline is not fool proof, and should be used rather as a last resort. It is after the stage of shock that x-ray examination should be made as the x-ray findings have no bearing whatsoever on the treatment. If depression, fracture, or whatever the findings may be, are present the treatment should be only that of support during the shock phase. There is a great deal to be said regarding physiological reaction and intracranial hemorrhage of acute brain injury, time will not be taken for discussion in detail, but will only state that no patient dies from pressure of intracranial hemorrhage during the shock period. After shock has subsided, it is up to the attending surgeon to decide whether he is dealing with a surgical condition and the time in which to make that judgment very often is a matter of minutes rather than hours. The patient is at this time in the phase of medullary compression. It may be of the subcortical or intracellular type, or subdural, and may rapidly go into high proportions. It is during this particular phase that the blood pressure elevates and the temperature elevates. Respirations are irregular and shallow and the pulse has a tendency to vary in rate. After we leave this phase we go into the stage of medullary edema with collapse and death. There is a drop in blood pressure, pulse is below normal, respirations are Cheyne-Stokes in character. Temperature rises higher and higher, as high as 110, and the patient dies. This is one phase in which surgery is contraindicated.

The proper time, according to the history and findings of this patient, could hardly have been chosen better. At cranial section through a right subtemporal flap there was a depressed fracture, communinuted in character over the motor cortex, anterior to the midportion of the Rolandic fissure; there was a laceration of cerebral tissue extending through into the lateral ventricle. The midmeningeal artery was ruptured and spurting into the wound; this was ligated, the depressed fragments removed, the dura widely incised in stellate fashion. Silk drainage inserted and wound closed. From the first there was a definite improvement in pressure symptoms even while patient was on the table and if any patient ever had a chance for recovery, no doubt this one did.

Autopsy revealed a laceration into the right ventricle with a profound degree of medullary edema resulting in collapse, paralysis and death. One of these findings alone would have been sufficient to cause death.

GENERAL DISCUSSIION

DR. E. F. HOLMAN, Professor of Surgery, Stanford University:

There is no mention of the pupils. We have been impressed with the importance of the inequality of the pupils, and the observation of the side on which the dilated pupil is. Patients in shock, with a large pupil on one side and a small pupil on the other, present an indication for operation on the side where the large pupil is. It is a very important sign in the early stage. Recall case of a child who fell downstairs, ran home crying, later complained of head hurting, became unconscious with stertorous breathing and was sent to the hospital; it seemed that the child would die any minute, pulse hardly perceptible, rapid and irregular; one pupil was dilated and we operated upon that side, that being the only sign of intracranial pressure; we found a ruptured artery, and the child's life was saved. Rand, of Los Angeles, has observed the same phenomenon, and has observed that occasionally there is muscular weakness or partial paralysis on the same side as the dilated pupil,—which would seem to indicate pressure on the opposite side; however, he thinks the enlarged pupil is a better indication for the side to be operated upon than is the muscular weakness; this weakness in such cases is doubtless due to contrecoup injury to brain tissue. In the last few years we have noticed this sign in five cases. The use of spinal puncture is still open to question. In the Cincinnati General Hospital, where they have many cases of this type, they were at first enthusiastic over the elimination of pressure by spinal puncture; more recently, they are doing fewer and fewer spinal punctures and fewer operations, even in the types of case formerly subjected to operation. The subject is not clearly cut, even at present. There are a few cases with real evidence of intracranial hemorrhage which can be helped. Many have multiple small punctate hemorrhages which will not be helped by operation. Acute cranial injuries are certainly a great problem still. Certainly depressed fractures should always be operated upon. The slight irritation which one gets from depressed fracture may not cause immediate trouble, but two or three years later, petit mal or grand mal may develop, as the result of even small depressed fracture. Penfield of Montreal has suggested that we expose the cortex and remove the injured cortex by light suction with an artificial siphon. Normal brain tissue will not come out but traumatized brain will and with its removal you get less scarring and less contraction of brain substance and therefore less likelihood of epilepsy and other esquelae.

DR. E. R. GASKINS discussed the value of Muck's epinephrine-sound test of the vascomotor reflex of the nasal mucosa in cranial injuries. In this test the inferior turbinates are swabbed with 1:1000 adrenalin and as ischemia takes place a small probe is drawn across the mucosa of the bone. Normally a pink line appears along the track of the probe, but in pathological conditions the opposite effect occurs; that is, a white streak. Several conditions will give this reaction, which is due to a change in the vascular fibres of the cervical sympathetics. It is always found after depressed fractures; it may remain throughout life. He has examined one patient with head fracture and the reaction was very definite and decided. Reaction occurs on same side as the head injury.

DR. E. PAYNE PALMER discussed the importance of limiting fluids in cranial injury, so as to prevent edema. This has been emphasized by Temple Fay of Philadelphia. Even after the patients are up and around, fluids should be limited to prevent epilepsy.

DR. F. J. MILLOY quoted Beasley, of Chicago, to the effect that spinal puncture should not be done after head injuries.

DR. M. I. LEFF inquired as to the reason for this statement of Dr. Beasley's; in his experience spinal puncture had worked like magic in many cases, during his work as industrial surgeon in Old Mexico.

DR. HOLMAN in further discussion, said that many cases return with post-traumatic headache; he again quoted Penfield who treated such cases

often by air injection with the patient in the position which will direct the air to the desired point. Air is injected by the spinal route, after withdrawing fluid.

DR. ROSS said that many patients who do not have skull fracture have symptoms of brain injury without fracture.

DR. RANEY closed the discussion by stating that in treating acute cranial injuries, the fracture is simply an interesting finding. It is not the fracture which is to be treated, but the brain injury, and acute brain injury is frequently sustained without fracture. Oftentimes the fracture is beneficial, acting as a decompression which allows the escape of blood and fluid. An acute lesion of the brain without fracture is more serious than one with fracture; they are to be treated just the same.

CASE DISCUSSION

(Edema Below the Waist with Dehydration Above).

(Case 17041, Case Records of the Mass. Genl. Hosp., N. E. J. of Med., Jan. 22, 1931, p. 168.)

Case Record

Man, fifty-six years old who entered the hospital September 30 last complaining of generalized edema of the abdomen, scrotum and legs of six weeks' duration.

Four years before entry he noticed the onset of progressively increasing constipation. Two years before entry he had epigastric pain, a constant dull pain and occasionally a sharp stabbing radiating pain across the upper abdomen, primary in the right upper quadrant. This came on one to two hours after meals. It was relieved by food and soda and made worse by fatty foods, fruit and vegetables. Crackers relieved it. Seven weeks before entry the pain ceased entirely. Six weeks before entry the edema commenced. At first he noticed it only at night in the ankles, but for four weeks it had been constant and he had noticed pitting up to the abdominal wall. His belt was about four inches too short. He had had progressively increasing dyspnea for four weeks. His doctor said that a year before this he was definitely jaundiced for three months and had clay-colored stools. The man himself did not know this.

The past history was negative except for considerable beer and an occasional whiskey for several years until the advent of prohibition, since when he had taken no alcohol whatever.

Examination showed a well developed thin and dyspneic man. The fundi showed extensive old chorioretinitis. Both diaphragms were high, and there seemed to be signs of fluid at both bases. The position of the apical impulse of the heart was in the 4th interspace 3 centimeters outside the midclavicular line. It was thought that the heart was displaced rather than enlarged. A systolic blow was heard at the aortic area. The blood pressure was 110/75 to 122/80. There was marked ascites and generalized edema of the feet, ankles, arms and legs.

Extensive laboratory studies were made. The urine showed a trace to a large trace of albumin. The sediment showed leukocytes constantly and red cells at 12 of 19 examinations, on three occasions as many as 30 to 40 per field. Occasional hyalin casts were noticed. A two-hour test showed a high fixation of gravity, 1.030 to 1.045. The renal function was 25 per cent. The initial red count was 5,310,000, the hemoglobin 60. After two weeks the red count was 3,200,000, the hemoglobin 35. He was transfused at that time because of the anemia and the low serum protein. This had no effect on the red count. The leukocyte count was at first 15,000; then it jumped to 20,000 and back to 17,000 and 18,000. The sputum was grossly blood tinged. There were no tubercle bacilli. There were several long chains of yeast-like Gram-positive organisms. The basal metabolism was —3, pulse 68, weight 66 kilometers. A Hinton test was negative. The non-protein nitrogen was between 40 and 50. A few days before his death it was 49. The liver function and van den Bergh tests were both normal. The blood fat was 439 milligrams. The serum protein was 4 per cent. We transfused him because of the low serum protein. We thought the raising of the serum protein would be of value. The blood chlorides were 611. The cholester was not done early, but after he had been in the ward about a month. It was 185 milligrams. The uric acid was 4.9.

Chest films taken on admission showed pleurisy of the left base and some fluid. There was nothing on the right. He had carious teeth. Three weeks later chest films were interpreted as probable edema of both lungs and fluid at both bases. An eye consultant said that the fundi gave evidence of congenital lues.

Soon after the patient's entry we tapped his abdomen and got 3 liters of pseudochylous fluid, a cloudy, milky-appearing fluid. The fatty acid was done on this, and was 108 milligrams.

The temperature was normal at first; then it went up to 101° after five days. The pulse went up to 100 and the respirations to 35. There was no particular change in the chest findings at that time. He complained of pain in the left flank high up, almost at the costal margin. There was no rub and the fine crepitant rales he had at entry persisted. After a few days the temperature came down gradually to normal, but only for a week. After the second week there was rather a swinging temperature with an occasional rise to 101°. The pulse climbed steadily after the second week. There was a rub at the right base and fine crepitant rales along with the dullness. We thought he probably had some intrinsic lung infection as well as the fluid shown by x-ray. He became very weak. He was transfused, but this had no effect on the blood and the edema. Finally he lost all appetite. During the last week he was prostrated. He was mentally clear. He was dehydrated in spite of the edema. The upper part of his chest was emaciated. His tongue was very dry and harsh. Edema of the belly persisted throughout his whole stay. A week before his death for one day there was dull constant pain over the precordium, non-radiating. He was not relieved by nitrites. The aortic systolic blow persisted but did not change. Two days before death the temperature suddenly dropped from 102° to 97° by rectum. The pulse climbed from 140 to 150 towards the end. An area of dullness, rales and intense bronchial breathing was noted at both bases. On November 3 he died.

Discussion by Dr. J. M. Greer, Phoenix

The strange thing to me in this case is that after all he had had and all that has been done to him in the way of laboratory work, etc., that he lived as long as he did. Starting four years before this admission at the age of fifty-two with the progressive constipation and two years later the epigastric pain radiating across the upper abdomen and primarily in the upper right quadrant, coming on one to two hours after meals with food, soda and cracker ease would suggest duodenal ulcer. The aggravation by fatty foods and the history of jaundice given by his doctor points toward gallbladder disturbance, and he very probably had gallstones. However, there are other laboratory findings that indicate a disturbance in fat metabolism from some cause or other. In a man of this age malignancy must be thought of and many times as in this case cannot be ruled out. The edema and the progressively increasing dyspnea suggest lung and heart involvement which

must be further looked into. The chlorioretinitis suggests syphilis or some sort of nephritis, and these must be kept in mind as we make our differential diagnosis.

The chest findings suggest long involvement and we shall take their word for it about the heart being displaced rather than enlarged. The ascites and general edema bring us back to the lungs and heart and in the absence of more definite heart findings we are inclined to place the blame upon the lungs. However, in going over the laboratory findings we must concede that nephritis or nephrosis to the extent of considerable damage to the kidney function was present. If we can take the sputum examination as positive for yeast-like organisms, I think we can make a positive diagnosis of fungus infection of the lungs which will account for many of the findings. I do not know whether or not it would produce the anemia present in this case. The rather rapid change in the chest condition as shown in the difference between chest films taken at the time of entrance and three weeks later would indicate some active process in the chest or lungs. With this brief discussion and not having time to go into the disturbance of fat metabolism and absorption, which I hope some one will, I shall make a diagnosis of

1. Fungus infection of the lungs.
2. Nephrosis, bilateral.
3. Anemia, secondary.

Malignancy cannot be ruled out.

Discussion by Dr. Robt. S. Flinn, Phoenix

The presenting symptoms in this case are generalized anasarca of six weeks' duration, severe anemia and low serum protein. Time will not permit of a lengthy discussion of the differential diagnosis. This patient undoubtedly had a nephrosis. Judging by the amount of laboratory work completed the question which the consultants are trying to settle relates to the type of nephrosis. Is this patient suffering from the type of nephrosis described by Volhard in 1914, but now generally referred to as "Epstein"s nephrosis?' Epstein believes nephrosis to be a distinct clinical entity and to be a "metabolic disease" characterized by changes in the protein and lipoid content of the blood serum. He believes further that the water retention and edema are of extrarenal origin and are due to the reduced amount of blood colloid which has caused a lowered osmotic pressure. Starling has shown that the osmotic pressure of the blood proteins amounts to 25 to 30 mm. of mercury. With a reduction of the blood proteins with consequent reduction of this intracapillary force there would be a relative increase in the osmotic pressure exerted by the intercellular fluids. As far as can be learned, Epstein has failed to prove his theory. On the other hand, this theory has not been disproved. Epstein recommends a high protein diet in an effort to restore the lowered blood colloids and thus raise the decreased osmotic pressure.

Typically Epstein's type of nephrosis occurs in young individuals. It is characterized by marked edema with hydrothorax and ascites, large quantities of albumin in the urine with casts but with no red cells, reversal of the usual serum albumin—serum globulin ratio, increase in cholesterol content of the blood, lowered serum protein level, normal non-protein nitrogen, normal blood pressure, low basal metabolic rate and marked secondary anemia. Munk has called attention to the doubly refracting lipoids in the urine and further stresses the luetic origin of the disease.

Since in his opinion the extra renal factors are of prime importance Epstein has given the name "Diabetes albuminuricus" to the disorder. In diabetes the glycosuria is the result of a perversion in the carbohydrate metabolism, so in this disease the albuminuria which is the chief symptom is the result of a perversion in the protein metabolism. Epstein gives large doses of thyroid gland in addition to the high protein diet. I have observed excellent results in two cases of this sort on Epstein's regimen.

As Munk has pointed out, true lipoid nephrosis is an exceedingly rare condition. Christian has never seen, or should I say never recognized, a case of nephrosis in his 20 years of hospital work. It is true that the majority of cases are those of glomerulitis with a superimposed nephrosis. They show in addition to the tubular degeneration a certain amount of glomerular involvement. The case under discussion comes in this group. The marked edema, low serum protein, normal blood pressure, marked anemia are all indicative of this condition. The presence of red blood cells may mean glomerular involvement. The blood cholesterol is normal. The serum protein ratio is not given. We shall expect to see the large white kidney with tubular degeneration. However we shall undoubtedly see a moderately contracted kidney with evidence of glomerular inflammation as well.

Diagnosis:

Lipoid Nephrosis (Volhard-Epstein type) with glomerular involvement.

Hydrothorax, pericardial effusion, ascites, terminal bronchopneumonia (?).

Discussion by Dr. Victor Randolph, Phoenix

Constipation in a man 56 years old is suggestive of obstruction due to malignancy of the large bowel. The symptoms of pain in the right upper quadrant could also be present in such a condition. This pain and the dietary necessities alsu suggest gallbladder disease with stones, especially taken with the three months history of jaundice with clay-colored stools. This, however, could not have been severe, else the patient himself, as well as his physician, would have known it.

The dyspnea is apparently explained by pulmonary edema and pleural effusion, The edema of lower extremities and abdomen when considered with pulmonary edema suggest cardiac failure or abdominal venous obstruction plus pulmonary or pleural infection. There is insufficient evidence to show pulmonary infection. The laboratory examinations draw attention to the kidneys and because of the persistent red cells in the urine we think not only of parenchymatous damage which could be explained by chronic passive congestion but also of renal infection or malignancy. Since symptoms of disease of the large bowel were, at most, only suggestive, and since we have definite findings of renal disease which could also explain part of the symptoms, I eliminate the former and assume that there was nephrosis which may have been secondary to malignancy of the kidney, perhaps the right, since symptoms pointed to the right upper quadrant. In addition I believe there was a chronic cholecystitis probably with cholelithiasis and terminal bronchopneumonia. It seems that the heart must have some part in this picture, but I cannot arrive at any diagnosis other than probable arteriosclerosis of the vessels.

Discussion by Dr. L. C. Barlow, Phoenix

Sharp stabbing pain across upper abdomen relieved by food and soda and made worse by certain foods certainly is indicative of gastric ulcer. Also with history of jaundice and clay-colored stools one year previous one would also have to think of some pathology in the gallbladder. It is frequently true with gallbladder or gastric ulcer that the patient may have increasing constipation. This patient probably had a gastric ulcer which subsequently became malignant. This might account for sudden cessation of pain. Edema of ankle followed by edema

of abdomen with embarrassment of heart producing a generalized edema seems reasonable. Blood in his urine could be accounted for from the same angle. No doubt this man also had some old damage to his kidneys as indicated by his high fixation of gravity of urine (1030 to 1045) and hyaline casts, the chorioretinitis may be due to syphilis, diabetes, myotopia and nephritis. The sputum was grossly blood tinged which is frequent in any condition due to heart failure. The yeast like organisms in sputum are probably secondary invaders and of no importance. Increasing N. P. N. is consistent with failing heart and congested kidney; the uric acid cholestrol and blood chloride were not far from normal. A significant finding is that of a milky appearing fluid withdrawn from the abdomen cavity: this is not an unusual finding, but is occasionally found and when found makes us think of carcinoma or tuberculosis obstructing the chylous flow. No doubt he developed a terminal bronchopneumonia.

Diagnosis:

1. Cancer of stomach secondary to gastric ulcer.
2. Cholecystitis.
3. Chronic nephritis.
4. Terminal bronchopneumonia.

Discussion by Dr. R. C. Cabot, Boston

The history suggests peptic ulcer, but is not conclusive. The pain is more continuous than we expect in peptic ulcer. The patient ought to be entirely free from pain in certain parts of every day.

He had lost weight in spite of all this edema.

We do not find in the examination of the heart any good explanation of this edema. Up to this point I have been assuming that he has the elderly man's heart disease, the hypertensive type of heart disease, but I was evidently wrong.

The range in the specific gravity of the urine certainly cannot be said to be limited in any sense. The only significant limitation of gravity is limitation at a low point. The renal function is perfectly normal. We have no good evidence of nephritis. The case is getting more and more difficult. First it looked like a heart case. Then that was pretty well ruled out. Then it looked like a kidney case. Now it is not at all clearly a kidney case.

The blood fat shows a marked increase. Normally it is 190 to 240.

The serum protein shows a marked decrease. The normal is 6 to 8.

The basal metabolic rate is practically normal. —3 is nothing. So the case cannot be put down to pseudo-edema or myxedema.

The blood chlorides are markedly increased, as they might be in nephritis. I do not know what else except nephritis increases them.

All those chemical tests, I take it, mean that they were thinking of nephrosis because they could not get a clean-cut diagnosis of nephritis. Nephrosis is being studied with a good deal of interest nowadays.

The x-ray shows evidence, I suppose, of fluid in the chest. From the heart shadow we cannot lay this case to heart disease.

The cell count in the ascitic fluid here is of very little significance. It hardly ever has much significance in abdominal fluid. It has some value in chest fluids, but very little in abdominal fluids. This is the sort of fluid we may get in almost any chronic abdominal disease.

When we can feel a friction rub it is very comforting,—then we are sure it is there. If we hear one we are not sure of it. We can feel sonorous and sibilant rales. If you had never felt one at all you might make a mistake. But if you feel a friction once it is there. It seems as if there was evidence of pneumonia and pleurisy or both, as Dr. Holmes led us to anticipate.

We must say infection of the pleura and presumably of the lung, which was the immediate cause of death. I am interested in that long-standing edema. We cannot put it down to any ordinary cause of edema, and that raises the question of nephrosis.

I do not know any other causes for edema than those that I have mentioned and starvation, which of course we do not need to consider here. There are a few cases that I have seen coming from postmortem—I remember two—in which there was a combination of nephritis and nephrosis, so I am prepared for something like that in this case. Nephrosis is believed not to be a disease of the kidneys alone but of those along with other organs as in eclampsia, where there are lesions in the kidney but more particularly in the liver. If this is nephrosis I am prepared to hear Dr. Mallory tell us that there is nephritis also.

Dr. George W. Holmes: The first film shows a definite process at the left base. The diaphragm is rather high on that side. The shadow is not very dense and the heart is not displaced. The heart shadow is fairly well outlined and I think well within normal limits. The supracardiac shadow is perhaps a little increased. The aorta is a little tortuous. I do not think there is sufficient evidence to say the aorta is dilated. There may be some arteriosclerosis. A small amount of fluid in the pleural space or even a collapse of the lower lobe might give that picture.

In the second film there is a good deal of rotation which throws the heart to the right. The diaphragm is very high on both sides and the lung fields are somewhat hidden and blurred by motion. In such a film as this there might be more in the chest than appears. There is some dullness at the left base. There could be fluid behind the high-domed diaghragm.

About all we can say is that there are areas of consolidation without saying what it is due to. Such an area as that might be due to a pneumonic process in the lower lobe. It might be infarct or embolus. There is some involvement of the pleura which one would not expect with a simple embolus.

Clinical Diagnosis—Chronic nephritis.

Dr. Cabot's Diagnoses—Nephrosis with nephritis or X.

Acute pleuritis.

Discussion by Dr. Tracy B. Mallory, Boston

This is a case on which it was certainly very difficult to make a clinical diagnosis that would check up with the various findings. At autopsy we found a number of different diseases which I cannot connect at all. I take it that most or all of them are of separate etiologies, yet each of them played a part in the general picture.

The most obvious lesion anatomically and I think w thout much question clinically too was the pathology in the kidneys, which clincally had given a suggestive picture of nephrosis. Pathologically we should have to classify it as subacute glomerular nephritis with secondary tubular degeneration. There is an extensive glomerular process, I think primary in spite of the nephrotic symptomatology. It is always dangerous to make a diagnosis of nephrosis in anyone out of childhood unless one does it with the reservation that probably the glomeruli are involved too. I am sure we practically never meet it uncomplicated in adults. Often, however, the secondary nephrotic element may dominate the clinical picture. I think unquestionably that is true here.

We also found cirrhosis of the liver. It is not an extremely marked cirrhosis but a very definite

one. The liver weighs 1600 grams, which is normal in size. It is not atrophic. Histologically I am not able to classify the type. It is consistent with an old alcoholic process; but assuming that his history of not having drunk heavily for the last eight or ten years, but having drunk heavily before that is correct, we could not expect to find the specific type of hyalin degeneration we get in the livers of men who have used alcohol within the last year of life. I should therefore be inclined to think this is an old and quite inactive alcoholic cirrhosis.

The immediate cause of death was totally unexpected. It was a massive pulmonary embolus. In view of the rather slow way in which he gave out, there was nothing to suggest that at all. Both pulmonary arteries were completely filled with clot. In searching for a primary thrombotic focus from which the embolus might have broken loose we found thrombosis of both renal veins. We found nothing in the vena cava, yet I think it is almost certain that there was a thrombus in the vena cava at the level of the renal veins and that it broke entirely loose and caused the pulmonary embolus. The small remnants of clot found in the renal vein were in the distal portions of the vessels. Such a process fits well with the clinical finding of edema in the lower half of the body and dehydration above. At least it would help a great deal to explain the picture. He also had an acute endocarditis of the vegetative type. He had multiple septic infarctions in the lungs and one very sizable abscess. The pleural cavities contained a very small amount of serous fluid at the time of autopsy.

We have three separate diseases which might easily have caused the edema. None of those diagnoses explains very well the very marked and rapidly progressive anemia, which however fits with the bacterial endocarditis.

Anatomic Diagnoses — Subacute glomerular nephritis with tubular degeneration (nephrosis).
Cirrhosis of the liver.
Pulmonary embolus.
Acute endocarditis.
Infarcts of the lungs.
Abscess of the lugn.
Acute pleuritis.
Thrombosis of the renal veins and (probably) of the vena cava.

ARIZONA ANTI-TUBERCULOSIS ASSOCIATION

T. C. CUVELLIER, Executive Secretary, Phoenix, Ariz.

The activities of the Arizona Anti-Tuberculosis Association have been varied and wide in their scope. During the past ten years, especially, the Association has been helpful in establishing many useful agencies dealing with the problem of tuberculosis, child health and sanitation.

The Association has, by demonstration in many communities, proved the value of the community nurse, or public health nurse, and has been successful in having nurses employed in many of the communities as a permanent feature of the public health activities of schools, county and city health offices. At the present time there are over fifty such nurses employed in Arizona, and, as I have said before, many of them are employed as a result of demonstrations and surveys made by our Association.

The Association has conducted an intensive child health educational work throughout the schools of Arizona, reaching thousands of children and as many homes, with a work which can not help but be of tremendous value as a disease prevention and life-saving activity. In this work we have had the whole-hearted cooperation of the school principals and teachers throughout the state. There has always been a demand for our child health educational publications, health charts and booklets dealing with child health. The Modern Health Crusade, a movement designed to promote the observance of daily health chores, has always been popular and is recognized by the school authorities as of great value in securing child health through practice.

This child health educational work has been supplemented by lectures and addresses by our Secretary, and by volunteer workers in many communities who have shown such an interest in this department that they have been ready to serve as assistants. We have found the school teachers and school nurses valuable mediums for the distribution of our propaganda. Much of this has gone beyond the actual reaching of the children and has entered their homes, where good results have been attained in promoting better methods of living and sanitation of homes, thereby serving as a preventative in the spreading of sickness.

The Association, for three years, conducted a preventatorium demonstration, hoping that such an institution might be developed as a permanent feature, supported by public funds. While we were not successful in securing sufficient financial support to warrant the establishing of a full time preventatorium on a large scale, such as we had hoped for, nevertheless the interest awakened by this preventatorium demonstration resulted in the establishing of several small institutions throughout the state where children predisposed to tuberculosis are being cared for under the rules and regulations set down by the propaganda of our Anti-Tuberculosis Association. While from a spectacular standpoint these results have not been as successful as a larger institution might have been, in reality a greater number of children are being given this care through this method than it would have been possible for us to have taken into one single institution calculated to care for the whole problem.

The Association has conducted public health service in practically every city in our state with a population over one thou-

sand. These services were conducted with the help of trained workers and public health nurses, and good reports of same when submitted to the official and volunteer health agencies, in many instances resulted in a movement for better housing conditions and for greater public health and social service provisions for those communities.

It will be of interest to know that all health educational materials and propaganda are supplied by our Association and distributed free of costs. The Association has in stock for distribution, pamphlets and books dealing with the prevention of tuberculosis, and an effort has been made to place these booklets periodically in the homes of all tubercular persons within our state, trusting that by a wider observance of caution on the part of the sick ones, disease may not be spread to children and other members of the families. These same booklets have been printed in Spanish and other languages for the benefit of our foreign-speaking population.

The Association has conducted a relief work whenever called upon to handle cases residing outside of organized territories. The local Associations within the various city limits of the state are prepared in a measure to take care of relief work, but we have a large rural population wihch often looks to the State Association for support or participation in its relief activities.

The Association has been helpful in assisting thousands of cases of tuberculosis to find accommodations within their means. Unfortunately, Arizona is the goal of many migratory tubercular patients who are seeking recovery, and many of them come totally unprepared financially to take care of themselves for any length of time. It has been the aim of the Association to help such cases in securing accommodations which will permit of their funds lasting as long as possible, while at the same time enabling the patients to enjoy the benefits of the climate which attracted them here.

The Association has engaged in a campaign of educational nature in cooperation with the nation-wide campaign launched by the National Tuberculosis Association. While the limited means at our disposal do not permit us to enter as fully into some of these campaigns as we should like to, nevertheless we have put on campaigns urging periodical medical examinations and campaigns stressing the early diagnosis of tuberculosis. These activities have proved of help to thousands of our population.

The Association has participated, in cooperation with other civic agencies, in promoting legislation for sanitation and has been successful in many instances in bringing about a cleaner and safer condition in our public eating and drinking places, as well as in the handling of foodstuffs.

The endless demand for funds with which to meet, if only in part, the great relief problem in Arizona, has made it quite difficult for us in some years, to secure adequate funds to support a work of prevention on a scale on which we should like to conduct it, but this much can be said, that we have conscientiously, with the funds in hand, tried to accomplish as much as possible in each one of the fields of endeavor having to do with the prevention of tuberculosis and in the raising of a healthier and stronger generation of children, who are to be our future citizens.

ANNUAL FINANCIAL STATEMENT
JANUARY 1, 1930 TO DECEMBER 31, 1930

Balance on hand January 1, 1930		$1,585.06
RECEIPTS—		
Sale of Christmas Seals	$6,555.97	
Appeal letters of Mr. Spilsbury	767.00	
Memberships	100.00	
Donations	50.00	
Refund	41.67	
Sale of Printed Matter	1.00	7,515.64
TOTAL		$9,100.70
EXPENDITURES—		
HEALTH AND RELIEF WORK among children and adults, preventorium care for the undernourished, and nutrition class work	$1,741.38	
HEALTH INFORMATION WORK, Guidance for the sick as to where and how to secure suitable care in using existing health centers and sanatoria	580.46	
HEALTH EDUCATION through health centers, lectures, leaflets, exhibits, posters, motion pictures, newspapers, magazines and modern health crusades in public schools	2,205.75	
ASSISTING LOCAL Tuberculosis Societies and Committees to cooperate and to increase the scope of their activities	1,277.02	
NATIONAL ANTI-TUBERCULOSIS ASSOCIATION Seal Sale Supplies	692.12	
SEAL SALE EXPENSES	755.30	
Five Per Cent of Christmas Seal Sale to National Tuberculosis Association	625.91	7,877.94
Balance on Hand December 31, 1930		$1,222.76

CASE OF HEADACHE AND BLINDNESS
(Diagnostic Discussions)

(Case 16511, Case Records of the Mass. Genl. Hosp., from New Eng. Jour. of Med., Dec. 18, 1930, page 1252.)

CASE RECORD

First admission. An American waiter fifty-three years old entered March 7 complaining that he could not see.

A year and a half before admission, just after returning from an automobile vacation trip, and when he was feeling as well as usual, he awoke one night feeling weak, and vomited. He continued to vomit about once an hour for three days. He felt very weak and had, he thought, some fever and at the onset a slight chill. After about a week, when he was feeling better, he noticed that things looked hazy. This became more marked until after a week he could not recognize objects. He had been wearing glasses for eight years and had recently had them changed. His oculist thought the trouble was due to his general condition. He became almost totally blind. Then the vision gradually improved until after eight weeks he was able to return to work, although things still looked hazy. He had occasional morning lacrimation. He remained in this condition until four months before admission, when his vision became progressively worse until two weeks before admission he had to stop work. The morning of admission he awoke with a severe frontoparietal headache. At admission he had vomited six times since morning and had had residual headache from time to time. He gave a vague history of precordial tingling at irregular intervals and of left-sided abdominal tenderness since the onset of the present illness.

The family history is not significant.

He gave a past history of slight edema on exertion and occasional palpitation. He denied venereal disease by symptoms. His history was otherwise negative.

Clinical examination showed an obese, very nervous and hyperesthetic man, able to distinguish fingers only at three feet. A few teeth were carious. The tonsils were large and cryptic. The left showed gross scarring. The left border of supracardiac dullness was 8 centimeters from midsternum, 1 centimeter outside the midclavicular line. The right border was 2 centimeters to the right. The cardiac dullness was 6.5 centimeters. A soft systollic murmur was heard at the base. The pulses and artery walls were normal. There was precordial hyperesthesia. The blood pressure was 115/80. The lungs were normal. The abdomen was very obese, otherwise normal. Rectal examination was negative; no hemorrhoids. The left pupil was greater than the right and slightly irregular. An ophthalmologist found the disc margins slightly blurred but the physiological cups preserved. The discs were not atrophic but were slightly pale temporarily. Neurological examination showed the cranial nerves negative, sensation roughly normal, no ataxia or loss of position sense. The neurologist thought the fundi looked normal. He reported bitemporal hemianopsia. He found all the tendon reflexes equal on both sides and within normal limits of activity. The abdominals were not elicited. Past pointing, touch and temperature sense were intact throughout, also position and vibration sense. Coordination tests were well carried out.

The temperature and respirations were normal. The pulse was 60 to 100.

The question of operation was talked over with the patient's wife. March 17 he went home, to return in a week.

Second admission, March 31.

Examination was as before.

April 5 operation was done. By April 13 the wound was dry and clean, the general condition good and the vision slightly improved on the right. April 27 the patient was discharged, to return in two weeks for a second operation.

His vision remained improved until about May 25. Then it began to fail rapidly.

Third admission, June 4.

June 6 operation was done. That night the temperature and pulse were very high. The patient was clear mentally and the clinical condition good. By June 10 the temperature and pulse were going down to normal and the clinical condition better. On June 13 he complained of a period of dizziness. June 22 he complained of some pain over the left side of his chest and back, not aggravated by respiration. The following morning it was quite severe and worse on motion, so that he was afraid to swallow cold water. The temperature was 99°. The respirations were normal. Physical examination was negative except for rales at both bases at the end of inspiration, more on the left, and a few under the left axilla. By afternoon the pain had become more severe over the precordium. Examination showed cyanosis of the fingers. The chest was as before except for dullness at the bases. The leukoocyte count was 14,000, the pulse 120, the respiration 30, the temperature 100.5°. The abdomen was slightly distended, with questionable enlargement of the liver.

That night when being lifted off the bed pan the patient suddenly began gasping for breath and choking, became very cyanotic and pulseless,, and in three minutes died.

Discussion by J. Madison Greer, M.D.

There seems to be nothing significant in the age, occupation or sex of this individual that would point toward anything in the diagnosis. The awakening at night feeling weak, and vomiting after a vacation trip, are not particularly unusual. I can imagine such a thing even in Arizona if one would return from a vacation trip to the White Mountains sometime along in the latter part of August. One thing we would like to know and that is whether he nauseated before he vomited. The record is silent on this part, therefore we take it that he was not. The continuous hourly vomiting for a period of three days is very significant and in the absence of other signs and symptoms points toward some extreme toxemia or cerebral irritation. The irritation must be either toxic or mechanical and we must look for these. The absence of nausea suggests a mechanical irritation, rather than a toxic one.

The progressive decrease in vision with an improvement in his general condition is a significant factor, and rather discourages the idea of his decrease in vision being a purely toxic affair. The later improvement in vision recorded means an arrest or readjustment of the process whatever it might be. Then the rather sudden frontoparietal headache and vomiting, and we take it again this time without nausea, is significant of some trouble in the cerebrum or cerebellum. I cannot attach much significance to the precordial tingling or left sided abdominal tenderness, without other more definite signs or symptoms referable to the heart or abdomen. The past history of slight edema and palpitation in a fat man, to me is not very significant.

In the clinical examination, there is some cardiac abnormality but it seems to me nothing more than might be found many times in an obese individual of the age of this patient. I do not know the sig-

nificance of the precordial hyperesthesia. The blood pressure is not significant, except that it helps to rule out a hypertension; it could be consistent with many things including intracranial pressure from some cause, provided this intracranial pressure was not brought about suddenly. The inequality of the pupils is a positive sign and must be explained and points toward some reflex or intracranial disturbance. The eyeground findings seem a little indefinite but rather positive nevertheless. The neurologist reports a bitemporal hemianopsia which may be considered consistent with an irritation or pressure along the optic tract and is a focal visional change found many times in tumors in the cranial vault. It would be nice to see an x-ray of this cranium but we are denied this, so must get along the best we can without it.

With the enumeration fo the above mentioned important positive signs and symptoms, headache (bitemporal), vomiting without nausea, gradual visual disturbance with positive pupillary and eyeground findings, with normal or subnormal blood pressure, I shall venture a diagnosis of—

Intracranial Tumor.

This tumor is probably primary and probably a glioma (meningioma).

The operation done was no doubt a unilateral decompression.

The unilateral improvement following this procedure no doubt gave them courage to attempt another decompression on the other side. The high temperature and pulse following the second operation was probably a post operative reaction, mechanical, etc. The patient probably developed a pleuro-pneumonia or hypostatic pneumonia with cardiac embarrassment. The sudden death could have been due to embolism. However, it is not unusual for deaths of this character to follow operative procedures upon the brain.

Discussion by Howell Randolph, M.D.

Symmetrical bitemporal hemianopsia can mean but one thing, interruption of the pathway from the optic disc to the centers of the brain at the point where these fibres are associated in one bundle, as they decussate in the optic chiasma. Hemianopsia with a history of persistent vomiting presumably of the central nervous system type is sufficient to make a diagnosis of tumor of the brain. The localizing symptom placing it adjacent to optic chiasma makes a diagnosis of pituitary tumor most likely. Tumors of the cerebellum, pons or cortex of the brain produce optic disturbances in a very large percentage of the cases. These are usually asymmetrical, and may be very slight. They are most frequently associated with increased intracranial pressure, and choked disc can be observed in well developed lesions.

The other group of signs presented by this patient, those probably having more to do with the fatal outcome, are referable to the heart. Carious teeth and large tonsils showing evidence of a marked chronic infection furnish a portal of entry to possible occasional infections which may have left some mark upon the cardiac muscle. The presence of an enlarged heart and a systolic murmur at the base which was not apparently considered of much importance at the time of examination, together with obesity may have been but precursor evidence of the terminal event. The occurrence of pain over the precordium and around into the left back the day before death was probably the effect of coronary occlusion. A slight leukocytosis and temperature rise together with signs of moisture at the bases might indicate the onset of pneumonia. However the description is not definite for this condition and it seems more likely that a failing heart is responsible for that as well as for enlargement of the liver and distended abdomen. Persistent pain over the left side would be characteristic of pneumonia but sudden death of the patient makes coronary occlusion almost certain.

DIAGNOSIS: Adenoma of hypophysis cerebri. Cause of death, coronary disease, (occlusion); probably embolism.

Discussion by D. R. Gaskins, M.D.

I would like to vary slightly from the discussion of this case and discuss other conditions of nasal origin which could explain some of the symptoms from which this man suffered. I am sure that this case will be amply discussed with the thought foremost for tumors of the pituitary body with pressure on the chiasm resulting in a bitemporal hemianopsia. The neurologist and not the ophthalmologist made the diagnosis of the bitemporal hemianopsia and we are not dismissing the idea that this could have been a lateral scotoma affecting both the bitemporal areas rather than a typical nerve pressure pathology in the chiasm. We must not lose sight of the fact that it is possible to have nasal pathology that would explain this group of symptoms, while the internist is overlooking some other pathology thinking he is dealing with tumors of the pituitary body.

The group I would like to discuss represents those cases presenting positive eye changes and macroscopically negative nasal phenomena. This group, embracing the hyperplastic spheno-ethmoidal conditions, has, until recently, proved difficult to diagnose accurately. The sphenoid and posterior ethmoidal cells are so closely related that pathological conditions affecting this area usually include both groups of sinuses. Anatomical consideration and familiarity with this region is of vital importance. When we pause to think of the structures in close proximity we marvel that more complications do not occur. The posterior-superior and lateral walls of the sphenoid and posterior ethmoids are extremely delicate and to all appearances should easily permit extension of an infection into a neighboring area.

One conception of true hyperplastic spheno-ethmoiditis is one devoid of polypoid formation and pus secretion. It is a situation attended with a marked fibrous increase of the muco-periosteum lining the sinuses. In the course of the pathological changes the glandular elements are likewise involved, showing an increase in fibrous content with marked diminution in glandular structure. No symptom group in my experience is pathognomonic of the hyperplastic type of spheno-ethmoidal sinusitis. While it is true that pain is the most constant and predominant symptom, I have found instances of definite abnormallity in this district without pain. These are the secreting cases of naso-pharyngitis.

The proximity of the spheno-palatine ganglion with its widely distributed fibers has a tendency to increase our difficulties. Sluder, in his excellent works, has clearly shown how pain due to any disturbance of the ganglion may be referred to the frontal, parital and occipital regions as well as to the neck and shoulders. In spite of the pathological changes and existing symptoms, this region presents to the eye of the observer, either directly or by means of the naso-pharyngoscope, changes so slight that it is well-nigh impossible to distinguish from the normal. We have progressed to the point where we can detect hyperplastic changes of the posterior type of the middle turbinate. The existence of this condition arouses our suspicions of

pathological changes in the posterior ethmoidal district. Many times, however, after a most thorough examination, including a careful history, transillumination, direct examination of nasal cavity and posterior pharyngeal space, together with the use of the pharyngoscope, occasionally in conjunction with mild suction, we are reluctantly forced to render a negative report.

With all else negative we are dependent upon the radiologist and ophthalmologist for further information. The Granger technic is used in all my sinus pictures and the Granger line is carefully studied for any evidence that might indicate to us existing abnormality. Have used this method over a period of year and am becoming more and more convinced that the Granger line is of great diagnostic value.

Pathological conditions existing in the sphenoid and posterior ethmoidal cells, even though indistinguishable to the eye, may so affect the optic nerve that a retro-bulbar neuritis is produced. According to the prevalent theories, this neuritis may be produced by direct absorption of toxins, by edema with stasis and by hyperplasia with pressure. Irrespective of the method of production, but appreciating the importance of an early diagnosis, the ophthalmologist is asked to report particularly on color acuity and changes in the visual field. In a series of cases we have found that those patients upon whom the ophthalmologist has made a diagnosis of diminished color acuity with concentric contraction of the visual fields, usually return from the radiologist with a diagnosis of hyperplastic sphenoiditis. With these two diagnoses, we have found that conservative measures such as shrinking the middle turbinates, or the use of argyrol tampons, mild suction and irrigation are of little value. In these cases a spheno-ethmoidectomy is advised.

In the hyperplastic type, there is no loss of central vision for form, but a greatly reduced threshold for colors (central) red 3 mm. test object, green 5 mm. and blue 7 mm., varying with the severity of the disease from 20 to 98 per cent loss. In this type the periphery often presents concentric contractions down to the tenth meridian central zone for form and colors. These fields simulate those of optic atrophy, and yet they will improve 20 degrees fifteen days following operation and become normal within six months.

With this discussion in mind I would like to offer the diagnosis of hyperplastic sphenoiditis with a complicating localized brain condition, the direct cause of death being subacute endocarditis.

Discussion by R. B. Raney, M.D.

The outstanding symptoms of diagnostic value in this case seem to be headache, vertigo, blindness, which has been progressive in nature for over a period of possibly a year and one half, intermittent vomiting during the headache crises and bitemporal hemianopsia. There is nothing given in the physical examinatioin regarding cardiovascular system other than blood pressure and the cardiac dimensions with a soft systolic murmur which is probably hemic. On neurological examination there is no note made of spinal fluid examination, colloidal gold reaction, Wassermann, cell count, globulin, sugar, etc., all of which would be of considerable help in making a more accurate and positive diagnosis. When in the presence of headache, vertigo, and vomiting in absolute form I would consider it as pathognomonic of central nerve system disease. The history of precordial pain and left sided abdominal tenderness is recorded as vague and not prominent in the picture and to which not much significance can be attached. It might in some way represent a neurogenical entity from central nervous system disease were it manifested prominently, and even under the circumstance in which it has been described. However, I would consider it minimal in importance, possibly anginal in nature or due to pressure from a primary focus.

For a working basis we would have to consider brain tumor. Tumors of the posterior fossa and in particular the subtentorial group almost invariably show marked increase in the intracranial pressure with definite synergic disturbance partly from localization and partly through the increased pressure in and about the rubrospinal system, its cerebellum connectives and most cases give a history of definite unilateral vertigo. Choked disc is prominent, which is not present in this case. Tumors of the frontal lobes are very commonly silent, manifest themselves only late in the disease, and the termination of whcih is usually quite rapid after the initial onset of definite symptoms. Tumors of temporosphenoidal and frontal lobes are about the parietal region manifest definite localizing signs. Tumors of the corpus callosum and basal ganglia localize themselves early in the disease. Early decompression to relieve a great many pressure symptoms that have nothing to do with localization is of paramount importance. Secondly, we must consider infections, syphilis being quite common to a man of this age and could not be ruled out without more definite information. However, there is no note of a Wassermann reaction of either spinal fluid or blood, history of infection, etc. The diagnosis of tuberculous meningitis is made primarily from the spinal fluid findings and the presence of the primary lesion, and the usual symptom complex which this does not simulate. Brain abscess might run a similar course; however sepsis is always quite pronounced and the origin of infection less obscure.

Space does not permit lengthy discussion but in the presence of a three stage operation, the first, considering the complex of three of the cardinal symptoms of brain tumor and the localizing symptom of bitemporal hemianopsia following a history of visual change, only one thing could have been thought of, some definite pressure on the optic tracts, medial and posterior to the chiasma. Pituitary adenoma is the most common. I would presume that the first operation was one of decompression for further study and that the last two consisted of the two stage radical resection of the pituitary body.

Diagnosis: Pituitary adenoma.

Cause of death: hypostatic congestion, pulmonary edema and cardiac faulure.

Discussion by W. W. Watkins, M.D.

One of the first things we are called on to decide, in any diagnostic problem, is whether the patient's chief complaint is an essential symptom. In this case it is. Eighteen months ago this man woke with vomiting and weakness, followed in a few days by failing vision; this improved and remained so for 14 months, then began to fail again, this time accompanied by headache and vomiting.

From the history alone, the amblyopia could be due to ocular disease, systemic poisoning, or intracranial lesion. An oculist ruled out local disease, so we are narrowed down to systemic and intracranial causes. . History gives no reason to suspect drug amblyopia.

Clinical examination practically rules out uremia and other toxic causes for the amblyopia. It gives us some slight changes in optic disc and the bitemporal blindness, to which we will give our main attention.

Each retina is supplied by nerve fibres passing to both sides of the brain; the optic nerve has ex-

(Continued on page 137)

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NEW MEXICO MEDICAL SOCIETY

The annual meeting of the New Mexico Medical Society will be held in Albuquerque, May 20, 21 and 22. Program is being prepared, and the Program Committee announces that a splendid meeting is anticipated. Further announcement, with program will appear in the April issue.

ARIZONA STATE MEDICAL ASSOCIATION

The Scientific Program for the Fortieth Annual Meeting of the Arizona State Medical Association, which is to be held in Nogales, May 7, 8 and 9, is almost complete, but the full details are not available for publication in this issue. Among the important numbers on the program, the following have been assured:

Dr. A. P. Kimball, of Yuma, Ariz., will have a paper on "Special Anesthesia."

Dr. Floyd Sharp, of Phoenix, Ariz., will have a paper on "Birth Injuries."

Dr. Charles William Brown of San Diego, Calif., has accepted invitation to present a paper on "Bronchoscopic Diagnosis and Treatment, Including Foreign Bodies."

Dr. John Homer Woolsey, of the University of California, San Francisco, has accepted invitation to read a paper, and his subject will be "Surgical Problems of Usual and Unusual Gastric Lesions."

Drs. E. Payne Palmer and Dudley Fournier, of the Southwest Clinic, Phoenix, Ariz., will present a paper on "Sodium Amytal Anesthesia."

Dr. C. A. Thomas, of the Thomas-Davis Clinic, Tucson, will have a paper on "Head Injuries."

Dr. R. K. Smith, of the Thomas-Davis Clinic, Tucson, will have a paper on "Prenatal Care."

Dr. Oscar S. Brown, of Winslow, Ariz., will have a paper on "Trachoma."

Dr. John H. White, of the Southwest Clinic, Phoenix, Ariz., will present a paper on "The Healing of Myocardial Infarcts."

Dr. James M. Bisaillon, of Portland, Ore., has accepted invitation to present a paper, and his subject will be "End Results Following Intrapleural Pneumolysis."

Dr. John W. Flinn, of Prescott, Ariz., will have a paper on "Tuberculosis."

Dr. William Lyle Bell, of San Francisco, has been invited and is expected to present a paper on fractures.

Drs. A. M. Tuthill and Norman A. Ross, of Phoenix, will present a joint paper on fractures.

Dr. R. D. Kennedy, of Globe, Ariz., is expected to give demonstrations on the treatment of fractures, similar to those which have become so popular at the American Medical Association meetings.

Three or four additional papers are expected to be added to the final program.

The local committees in Nogales are making extensive preparations for the entertainment of the Association members and visitors. They are anxious to have a heavy attendance. We almost said a "full" attendance, but that hardly seems necessary.

ARIZONA HEALTH ASSOCIATION

The fourth annual meeting of the Arizona Public Health Association will be held at Nogales on May 5 and 6, the two days immediately preceding the meeting of the

State Medical Society, so the health officers may attend both meetings without undue loss of time.

Of particular interest to many of the physicians of the state will be an informal dinner meeting held on May 6, at which time Dr. F. V. Meriweather, specialist of the Industrial Hygiene and Sanitation Bureau of the U. S. Public Health Association, will speak on the industrial hygenic problems of the copper mining industry. All physicians interested in this question are invited to attend the meeting. Tuesday afternoon a clinical and laboratory study of bacillary dysentary will be given by members of the staff of the Desert Sanatorium, Tucson. Meetings will be held Wednesday to discuss public health problems of present interest to health officers in the state. Sections will also be held to discuss water and sewage problems, dairy inspections, and public health nursing.

COOPERATIVE CLINIC TOUR OF EUROPE

There is enclosed in this issue of the journal a leaflet outlining a very unique plan for a cooperative clinic tour of Europe, to start immediately following the American Medical Association in Philadelphia. This tour to be managed by the Travel Guild, Inc., one of the best and most reliable of the touring bureaus. The plan is being sponsored by the State Medical Journals, and complete information regarding it may be secured from this journal or directly from the office of The Travel Guild, Inc., 180 N. Michigan Ave., Chicago.

Several years ago a similar tour was arranged and conducted by this organization for the physicians attending the American Medical Association, and it was highly successful and thoroughly enjoyed by all who participated. The cost is quite reasonable for the accommodations provided, and this opportunity for visiting the historical and clinical centers of Europe is cordially recommended to the subscribers of this journal.

THE DISCOVERY AND THE DISCOVERERS OF X-RAYS

When we read some of the voluminous discussions which appear in the medical literature, we often think of the six hundred word paper of Roentgen, when he appeared before the Physikalisch-medicinischen Gesellschaft of Wurzburg, on December 28, 1895, to announce the discovery of the rays which now bear his name and which revolutionized physics and medicine. As a lesson in clarity and brevity of scientific discussion, and for the sake of introducing another very interesting fact in connection with x-rays, it is presented below:

ON A NEW KIND OF RAYS*

By W. C. Roentgen

(Preliminary Communication)

If the electric discharge from a large Ruhmkorff coil is passed through a Hittorf vacuum tube, or through a sufficiently exhausted Lenard, Crookes, or similar tube, and if the tube is covered with a fairly close-fitting envelope of thin black card, it will be found that a paper screen placed near the apparatus and covered with barium platino-cyanide will become brightly luminous and fluorescent. It is immaterial whether the prepared side or the unprepared side is turned towards the apparatus. The fluorescence is still noticeable at a distance of 2 metres from the apparatus. It is easy to establish that the cause of the fluorescence proceeds from the dischrage tube and from no other part of the electric circuit.

The first remarkable feature about this phenomenon is that we have here an agent that can pass through a black card envelope which is impervious to the visible and ultra-violet rays of the sun or electric arc, and that this agent is capable of producing vivid fluoresence. One was, therefore, led first to investigate whether other bodies possess this peculiarity.

It was soon found that all bodies allow this agent to pass, but in very different degrees. The following examples may be mentioned. Paper has a high degree of transmission[1]: I could see the screen fluoresce distinctly behind a bound book of about one thousand pages; printer's ink offers no noticeable hindrance. Similarly the fluoroscope appeared behind a double pack of cards; a single card held between the apparatus and the screen was almost unnoticeable. A single sheet of tinfoil was likewise scarcely noticeable; only after several sheets had been superimposed could their shadows be clearly seen on the screen. Thick blocks of wood transmit the rays[2]; boards of pine wood 2 to 3 cm. thick absorbed very little. A sheet of aluminum about 15 mm. thick weakened the effect very considerably, but did not cause the fluorescence to disappear entirely. Ebonite plates several centimetres thick allowed some rays to pass. Glass plates of uniform thickness show differences according as the glass contains lead or not, the former (flint glass) being less permeable. If the hand is held between tube and the screen the shadows of the bones show dark against the lighter shadow of the hand. Water, carbon bisulphide and various other liquids proved very permeable when examined in vessels of mica. I could not find that hydrogen was more permeable than air. Fluorescence is still distinctly recognizable behind plates of copper, silver, lead, gold and platinum, but only if the plates are not too thick. A platinum plate of 0.2 mm. thickness is still permeable; silver and copper plates can be thicker. In the case of lead, a plate of 1.5 mm. is practically impenetrable and was often used on account of this quality. A wooden rod of square section (20 by 20 mm.), of which one side is painted white with lead paint, behaved differently accord-

* Translation of a paper read before the Physikalisch-medicinischen Gesellschaft of Wurzburg, on December 28, 1895.

[1] By the "transmission" of a body I mean the relation between the brightness of a fluorescent screen held close behind the object and the brightness shown under precisely similar conditions but without the interposition of the body.

[2] For the sake of brevity, I use the term "rays" and more especially "X rays" in order to distinguish them from others.

ing to the manner in which it was held between the apparatus and the screen. The painted surface was almost without effect when the x-rays passed parallel to it, but it threw a dark shadow when they had to pass through it. As in the case of metals, the salts of metals, either as solids or in solution, can be ranged according to their permeability.

The fluorescence of barium platino-cyanide is not the only recognizable effect of the x-rays. Other bodies also fluoresce, as for instance the calcium compounds known as "phosphor"; also uranium glass, ordinary glass, calcspar, rocksalt, etc.

Photographic dry plates are sensitive to x-rays, and this fact is of special importance in many respects. It enables many phenomena to be recorded, thus making it easier to exclude deceptions, and whenever possible I have checked by means of a photographic exposure every more important visual observation on the fluorescent screen.

The other interesting fact and the reason why we say the "discoverers" instead of the "discoverer," is the one to which Dr. A. W. Crane calls attention in The American Journal of Roentgenology for May, 1930, which is also reproduced below:

The first to find the new planet beyond Neptune was C. W. Tombaugh, at the Flagstaff Observatory, Arizona. But the world grants the chief honor of this discovery to a man who has been dead fourteen years. Percival Lowell discovered this planet mathematically, determined its mass and plotted its orbit from the perturbations of its nearest neighbor. But he himself never found it in the heavens. Tombaugh, in the same observatory, working with a more powerful instrument, searched the skies with photographic plates where Lowell's calculations had shown that another planet should be found—and found it. That Neptune had been discovered, eighty-four years earlier, by precisely the same process in no way detracts from Lowell's achievement, and emphasizes the care with which astronomers give honor where honor is due.

This mathematical discovery of a planet preceding its physical discovery has an extraordinry parallel in the discovery of the x-rays. Two years before Roentgen found and demonstrated these rays, another physicist had discovered them mathematically, had specified their properties regarding reflection, refraction and the penetration of substances opaque to visible light, and had indicated their exact position in the spectrum beyond the ultra-violet. This was an achievement of intellect far outranking the calculations of the perturbation of a planet, great as that is. It involved the extension of a marvelous theory, a precision mathematical deduction, a depth of learning and a mental grasp such as only a von Helmholtz could bring to bear. For Helmholtz it was who, in 1893, published his Electro-Magnetic Dispersion Theory of the Spectrum, and provided on purely mathematical grounds the exact space which we now know to be occupied by the Roentgen rays. The final verification came in 1913, when Friedrich and Knipping, under Laue's direction, demonstrated on the photographic plate the nature and place of the x-ray in the spectrum.

We may properly ask why so remarkable an achievement in mathematical theory has not been more generally recognized? What is the difference between physics and astronomy? Has the public discredit of theories affected the scientific mind? Certainly it is with difficulty that any mention of Helmholtz can be found in works on the physics or history of the x-ray.

In the first book on the x-ray published in America, The X-ray, or Photography of the Invisible, by William J. Morton, M.D., we find an Appendix C, giving a review of the dispersion theory of von Helmholtz. The original paper of Helmholtz is buried in Vol. xlviii of Wiedmann's Annalen, which, so far as we know, has never been translated into English. Appendix C. is a reprint of an article by Sir Oliver Lodge published in The Electrician, London, England, July 17, 1896, seven months after Roentgen's announcement, and is the source of our information concerning the Helmholtz theory. Lodge is discussing the true nature of the newly discovered rays. In the course of this article, he says: "Taking all these things together, and looking at them in the light of a notable dispersion theory of von Helmholtz to which Prof. J. J. Thompson called attention in the Rede Lecture at Cambridge this year (June 10), it becomes almost certain that the x-rays are simply an extraordinary extension of the spectrum far beyond the ordinary ultra-violet."

Lodge then explains and discusses the Helmholtz dispersion theory in considerable detail, and concludes with this remarkable paragraph:

"Such is a rough account of the theory prepared by the extraordinary genius of von Helmholtz, on purely mathematical and Maxwellian grounds, in 1893, before even the experiments of Lenard, and indeed without any likelihood of an idea that the waves whose theoretical niche was thus provided, were so soon to be practically displayed in the laboratory as an accomplished fact."

This was written by Sir Oliver Lodge seventeen years before the demonstration by Friedrich and Knipping and proved beyond question that x-rays were, in truth, "an extraordinary extension of the spectrum far beyond the ordinary ultra-violet." Here we find another example of theory preceding demonstration. Lane, professor of physics in Munich, theoretically identifying, knowingly or unknowingly, the x-rays of Roentgen with the short-wave lengths of Helmholtz at the extreme end of the spectrum, reasoned that refraction and reflection had not been demonstrated simply because no surface sufficiently smooth and no grating sufficiently fine had been used. To him the theoretical structure of crystals was as real as though he had seen it with the naked eye. He proposed, therefore, that the cleavage plane of certain crystals be used as a perfect reflecting surface, when the atoms would provide the lines of a grating of ultramicroscopic fineness. This was carried out by Friedrich and Knipping, using a crystal of zinc-blend, with the result that the x-ray spectrum was given to the world, and that the x-ray ceased to be an unknown quantity.

Helmholtz's theory, or rather mathematical demonstration, was founded on Maxwell's electro-magnetic theory of light, and embraced the entire spectrum. Not only did it define and place x-rays, but it also provided for wireless or radio waves below the infra-red, and described their power to pass through all ordinary barriers. Helmholtz was more than a mathematician and theoriser. Seven years before the publication of his theory he set one of his pupils, Hertz, at the problem of producing some of these invisible waves in his laboratory to prove Maxwell's conception. Hertz, as the world knows, demonstrated for the first time the wireless waves which have since been known as Hertzian waves. Their practical application by Marconi and de Forest is another story. Lenard, who of all preceding investigators most nearly anticipated Roentgen, was in turn a pupil of Hertz. Thus was the torch handed down from the great physicist, whose influ-

Malonic ester stills in which intermediates used in the manufacture of Amytal are made—Laboratories of Eli Lilly and Company, Indianapolis, Indiana.

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ence led directly to the discovery of the wireless and to the brink of the x-ray.

Von Helmholtz, long before the time of his dispersion theory, was easily the foremost scientist in Europe. His writings were voluminous, and covered a wide range of subjects. He is best known among medical men for his invention of the ophthalmoscope. He started his career as a physician and surgeon, but later turned to teaching, holding successively the chairs of anatomy and physiology in Berlin, Koenigsberg, Bonn, and Heidelberg. He became distinguished as a physiologist, but even more as a mathematician and physicist, and in 1871 he returned to Berlin as a professor of physics. In 1888 he was made head of the Imperial Physico-Technical Institute at Charlottenburg. He had already been ennobled by the German Emperor. His overwhelming reputation is vividly recounted by Pupin. In 1893, the date of the publication of his dispersion theory, he visited the United States, having been selected as Honorary President of the International Congress of Electricians at the Columbian Exposition in Chicago. His death occurred in August 1894, at Charlottenburg, a year and four months before the discovery of those rays which he so marvelously predicted and described.

It was in this period after 1893 that both Lenard and Roentgen were carrying on their researches. The platino barium cyanide screen which led to the discovery of the x-rays was the chief instrument for the detection of ultra-violet radiations; that is to say, radiations in general beyond the visible spectrum. This fact has been emphasized to show that Roentgen was investigating the presence of invisible rays and that, therefore, his discovery was not an accident. Could Roentgen, a professor of physics, especially interested in the study of the spectrum, have been unaware of the publications of his great confrére, in his native language, on this special subject? We think it possible and probable. A careful reading of Roentgen's original paper announcing the discovery of these new rays contains not a word remotely suggestive of a dispersion theory, and yet Roentgen speculates upon the nature of the rays, and proposes a theory that they are longitudinal vibrations, as distinguished from the transverse vibrations of visible light. It is true that, within a year following Roentgen's announcement, two English scientists, Sir Oliver Lodge and Professor Thomson at Cambridge, in the light of the dispersion theory, came to the conclusion that Helmholtz was right, and that the x-rays of Roentgen lay at the ultra-violet end of the spectrum. But this mathematical theory of Helmholtz was, like the relativity theory of Einstein, understandable only by a select few. Roentgen had no reputation as a great mathematician. He was an investigator, not a theorist. He worked with things rather than ideas. Certainly his lack of acquaintance, or perhaps his undervaluation of the dispersion theory, is less surprising than the silence of other physicists who followed him.

However, unless Sir Oliver Lodge and Sir J. J. Thomson are mistaken, it appears that to Holmholtz belongs the credit for the mathematical discovery of the new planet. The physical discovery of the planet was the direct outcome of the mathematical demonstration. The actual discovery of the x-rays was not the result of any mathematical theory, but a triumph of the experimental method in pure physics. It is no detraction from Roentgen's discovery to recognize the achievement of Helmholtz, and to honor him as the theoretical discoverer of the x-rays. (The American Journal of Roentgenology, May 1930.)

PANORAMIC VIEW OF THE WOMAN'S AUXILIARY TO THE A. M. A. IN FOUR ARTICLES

2. North Central States

MRS. JAMES BLAKE

According to the Constitution and By-laws of the Auxiliary to the American Medical Association the Organization program is carried on by the active work of the vice-presidents. Mrs. Southgate Leigh of Norfolk, Va. is first vice-president and automatically chairman of organization. Due to her location on the map the second vice-president finds herself interested in the destinies of the North Central group of states. Looking backward, with pleasant memories to Detroit, and forward with delightful anticipation to Philadelphia we find this group of states all doing something of common interest.

In the January Journal of the Indiana Medical Society, the Auxiliary president stresses the importance of more constructive work on the part of her organized county groups. "Physicians' wives," she says in her New Year's address, "hold an enviable position in being privileged to have a part in a world-wide health program, and I would urge every physician's wife to bring before other women dependable knowledge, and a just appreciation of the real spirit and purpose and actual achievements of the medical profession." So from Indiana we know we are to have constructive work during this year. Physicians as a class are not prone to participate in legislative matters but when four distinctly separate bills, which affect the profession, directly, are presented during one session of a state's legislature, it is time to be up and doing.

Such is Indiana's situation this year and the doctors of the 7th district have thought it worth while to instruct their Auxiliary members on these subjects that their influence may be properly used. The Indiana Journal never fails to give the Auxiliary space, and it is little wonder the Indiana women are up and coming, when they have such Editorial Notes to enlighten and guide them in their constructive program work, as one finds in this same Journal.

Kansas is slowly getting a few things accomplished. A world wide depression has rendered prophets quite fameless abroad as well as at home, but the doctor's wife in Kansas is coming into her own, and we phrophesy that the Auxiliary will climb to the top due to the indomitable spirit of the leaders in that state.

In Illinois the motto might well read—"Builders we are, and builders we must ever be. Builders, not in stone that shelters life, but builders in life." We find good constructive programs—of well-balanced educational value, we find a Journal ever ready to broadcast Auxiliary news, and best of all we find a healthy organization line-up, and an advisory board from their Medical Society. Several of their county groups are having their members get busy with the "Health Audit Programs."

One project of worthy mention comes from the Vermillion county on the eastern boundary of the state. The county Auxiliary put on the Health Institute in Danville last November. A member from every agency in the county working out any kind of a health program, was included in the personnel of the speakers. It was for just one day, but it was worth 365 as a rouser for Auxiliary work. It really was sort of a Christmas Seal campaign opening, get-together of club women, and P.T.A. groups

1931

A New Pamphlet

discussing

MARCH-APRIL-MAY

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and showing the chief causative trees as done IN NATURAL COLORS

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Write for Bulletin No. 4

The Arlington Chemical Company

Yonkers, N. Y.

in the county. And what a wise idea for a Medical Auxiliary to have the head lines in the plans for such a "Health Day."

Wisconsin, Iowa and South Dakota are among the latest states to join the National Auxiliary. Organization is the key note for their work, and the National Study Envelopes are offered as program material. Right now if the modern doctor's wife needs to get one thing more than another from her organization, it is the knowledge of what is going on in this world; especially the world of medicine. Women are discriminating more carefully in the clubs they are joining. They are asking what membership will mean to them, what they will get out of it. For that reason the subjects for study should be more carefully chosen, and the roll call should be made to count for something more than jokes and quotations from forgotten poets. It isn't a pleasant feeling for a busy mother who rides miles to a meeting to say when it is all over: "I can't say I know any more now than when I started." And so we find these three states getting themselves scattered far and wide to aid and encourage Auxiliary members, already in, and prospective members.

Montana and North Dakota are debating pro and con but as Mrs. Hoxie said in her Detroit report, "I believe it will be a mistake from now on to organize a new state, unless it appears reasonably certain that there is interest enough among the doctors who want the Auxiliary, so they will foster it and stand back of it." And so we leave Montana half hearted about forming an Auxiliary, and North Dakota in the air.

We find Michigan giving intelligent cooperation with state and county officials. Women like men are interested in the improvement of civic affairs and healthful living and are realizing that they need to be armed with a definite knowledge of health laws and public health practices.

Missouri is in a very healthy condition. We find that Mrs. A. B. McGlothan, the president-elect of the Woman's Auxiliary to the American Medical Association, will attend President Hoover's White House Conference for Child Health and Protection to be held in Washington, D.C., February 19 to 21. Mrs. G. H. Hoxie, the president for last year, will also attend the White House Conference.

Mrs. A. W. McAlester tells us, the women of Missouri are finding the study envelopes, published by the education committee of the Women's Auxiliary to the American Medical Association, most interesting and instructive. The studies on "Common Defects in Children" and on "Diphtheria," "Smallpox" and "Typhoid Fever" were recommended by the Department of Health in the Missouri branch, National Congress of Parents and Teachers for use on Parent Teacher programs. Eight hundred copies of each were requested and supplied for use in Parent Education classes. Requests are constantly coming in for additional copies of the studies for use by teachers and Parent Teacher units. The Department of Public Information of the Extension Division of the University of Missouri is including these studies in its suggested programs for clubs in the Missouri Federation of Women's Clubs, and P.T.A. programs. This department requested back numbers of Hygeia for use in such programs. Three hundred copies of Hygeia were supplied by women in the state and by the circulation manager and are being extensively used in club programs. The Missouri chairman of Public Relations is planning to have a copy of each of the studies "Common Defects in Children" and "Communicable Disease Control" sent to each county school superintendent in the state. Several of the county Auxiliaries are using the study envelopes in their programs.

Mrs. M. P. Overholser of Harrisonville, Mo., has been appointed chairman of Public Relations in the Missouri Auxiliary. This Auxiliary maintains a scholarship for a medical student, per capita quotas being assigned to each county Auxiliary.

They also have sent in 30 per cent of the total number of Hygeia subscriptions recorded from all Auxiliaries from January 1, 1930 to January 1, 1931. Some county Auxiliaries provide Hygeia for all their teachers. Among these are Buchanan, Gentry and Lafayette. Cape Girardeau County Auxiliary has just finished paying a $1000 pledge to a hospital in the city and is now ready for another kind of work. They are a live group and cartainly work hard to be able to accomplish so many wonderful worth while things.

Minnesota, the North Star State, has had a busy and successful year on organization. The president and organization chairman have visited over the state and planned meetings and educational programs with many county groups. In October the International Medical Assembly met in Minneapolis, and at this time the Hennepin County Auxiliary celebrated its twentieth anniversary, by being hostess for five days to the visiting doctors' wives. A great many social affairs and an Educational Day, which included a speaker on Public Health, were features. Hennepin county is having a year with a definite program. Each month a speaker is scheduled, and one meeting during the year is reciprocity day and each Auxiliary in the state is invited to send visitors. This group features philanthropic work for tuberculous patients at Glen Lake and do much for the library at the Sanatorium. They have helped the Medical Society furnish their library and club rooms, spending $1000.

Ramsey county does much the same work. They have a scholarship fund for medical students. St. Louis county is noted for its work in the Public Relations field. The State Medical Journal gives a page to Auxiliary news. One of the other counties takes care of a nurse's scholarship. The Minnesota Auxiliary has a splendid advisory board and a page in the State Journal. The president will be one of the speakers on the program for the Annual Conference of Secretaries of the Component Societies of the Minnesota State Medical Association, to be held in St. Paul the first week in February. This is the first time the Auxiliary has been asked to take part in this annual affair. Mrs. Hesselgraves' talk will be "Uses of the Auxiliary."

And so closing my review of the work of the North Central Group of states may I say again—

Builders we are, and Builders we must ever be;
Builders not in stone that shelters life, but
Builders in life itself—ever remembering the future of the world, for generations to come depend upon what we th'nk and will and do today.

ANNUAL SESSIONS, AMERICAN MEDICAL ASSOCIATION, PHILADELPHIA, JUNE 8 to 12, 1931.

Eye, Ear, Nose and Throat man in active practice and good standing, experienced and accomplished, desires location or association in New Mexico or Texas for the benefit of a warmer climate. Add. Box W, Southwestern Medicine.

CASE OF HEADACHE AND BLINDNESS

(Continued from page 129)

ternal fibres from the temporal half of the retina and internal fibres from the nasal half. The external fibres continue along the lateral aspect of the chiasm to the same side of the brain (visual center to occipital lobe). The inner fibres from the nasal half of each retina decussate, or cross in the chiasm to the opposite side of the brain. The chiasm, then, will present in the middle, the fibres from the nasal side of each retina, controlling the temporal fields of vision; laterally in the chiasm are the fibres from the temporal sides of the retinas, controlling the nasal fields of vision. The optic tract has fibres from both eyes, the right tract having fibres from temporal side of right eye and nasal side of left eye; left optic tract the temporal fibres of left eye and nasal fibres of right eye. Do not forget the difference between the fields of vision and the involved portions of retina; a patient blind in the right field of vision will have involvement of the left halves of his retinas, and vice versa.

Hemianopsia means loss of vision in corresponding halves of the visual fields. It varies in type according to the location of the lesion and, when present, is one of the best localizing signs of intracranial lesions.

A lesion in left occipital area, causes blindness in the right half of each eye,—called homonymous hemianopsia,—temporal side of retina on left; nasal side of retina on right. It does not interfere with pupillary reactions to light, being posterior to juncture with nerves controlling pupil.

A lesion anterior to visual center and behind chiasm causes blindness in the same portions but does interfere with pupillary reactions to light on blind portions.

Lesion at the chiasm affects the nasal side of each retina, causing blindness of each temporal half of the eye,—bitemporal hemianopsia;—also there is absence of pupillary reaction.

Bitemporal hemianopsia means blindness on the two temporal sides of the person or the two nasal sides of the retinas, which means that we must have involvement of fibres from the two sides of the brain going to both eyes. The only place we can get this is at the decussation,—so that the bitemporal hemianopsia, unless hysterical,—must mean tumor in pituitary area, or some lesion producing pressure in this area.

We believe they operated for brain tumor in two stages,—and as a pure unadulterated guess, will say that they did not get it removed.

The further course and immediate cause of death was some cardiac complication.

Discussion by Richard C. Cabot, M. D. (Mass. Genl. Hospital).

(From Journal above)

We have to look for the causes of eye disturbances which start outside the orbit, those especially germane to internal medicine.

1. Uremia with uremic amaurosis. I remember a boy ten years old who was brought into the ward blind from acute nephritis. After three days' treatment he could see perfectly well. Uremic blindness is suspected to be due to edema of the posterior lobes. Whatever it is, it occurs in acute or less often in chronic nephritis, and it clears up sometimes with treatment.

2. What else outside the orbit gives blindness? Tabes dorsalis with optic atrophy. That is sometimes confined to the optic nerve or is part of a spinal disease. That can be ruled out because of the fact that he was seen by an oculist, who could have recognized such a condition.

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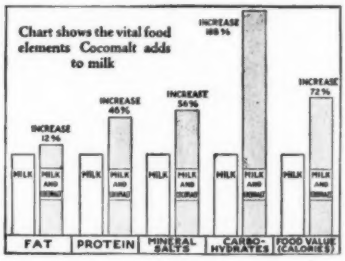

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3. The fact that the vision disappeared and came back three times makes us think of brain tumor, which often causes ocular disturbance. With a careful local examination this ought to manifest itself. If that was done and nothing was found it is very hard to say that the blindness was due to brain tumor.

4. The fourth thing which I remember is ethmoid sepsis working up through the floor of the orbit into the optic nerve, causing various degrees of blindness and blindness that comes and goes.

5. Hysterical blindness, a type seen in shell-shocked men in the war. The eyes were all right, and vision could often be suddenly brought back by appropriate treatment. If you had the right combination he could be cured in a few minutes. If not, he would gradually get well in a few months. That ought to be considered; but the case does not sound like that.

Bitemporal hemianopsia makes us think of a local lesion, probably tumor around the optic chiasm.

Lack of abdominal reflexes makes us think of multiple sclerosis. However, I never heard of a case of that disease beginning with blindness. I do not believe it is that, especially after this careful neurological examination, largely negative. Bitemporal hemianopsia is about all we have.

If they were talking with the patient's wife about operation, they were not talking about operations in general. We ought to hazard a guess as to what operation they were thinking of, and for what. I assume it was for something in the brain. They were not going to operate for uremia or for hysteria or for tabes. The only things I can think of are possibe tumor or ethmoid disease. Against the latter is the fact that we have no evidence so far as I can make out of any acute inflammation. The temperature and pulse are normal. We are not told that he had had bad colds in the head. There is nothing to suggest sinus trouble. Bitemporal hemianopsia does not go with ethmoid disease so far as I know. Brain tumor is therefore the thing most in my mind. I think they made a preoperative diagnosis of cerebral tumor.

Preoperative Diagnosis April 5

Suprasellar tumor.

FIRST OPERATION

A right frontoparietal bone flap was made pretty far forward, of moderate size. The dura was under definite although moderate increase of pressure. The dura was incised at the base of the skull flap and the frontal and parietal loops were retracted towards the midline. The brain was somewhat lacerated. A firm reddish discrete tumor, undoubtedly a meningioma, was seen at the base of the skull in the frontal region, very extensive and having a broad attachment. Only a specimen of the dura could be removed. It was planned to go in at a later date through a frontal approach.

PATHOLOGIC REPORT APRIL 5

Arachnoid fibroma (meningioma).

FURTHER DISCUSSION

That verifies your diagnosis and mine. So far I do not see that we have ruled out metastatic tumor. But it looks big for that.

SECOND OPERATION

A flap of skull was made in the right frontal region, the base being in the midline of the forehead. The frontal bone was drilled just to the right of the midline in two places. These holes were connected with each other and the bone was sawed through to its outer margin. The bone was removed. The dura was under a good deal of pressure. The bone above the supraorbital ridge was rongeured away and the dura was separated from the base of the skull. This was ineffectual and it was necessary to separate the dura from the frontal lobe. On account of pressure it was impossible to retract the frontal lobe to the point where the tumor could be expressed. On this account a portion of the frontal lobes was removed with the high frequency current, first by piercing the brain in several places with a sharp pointed needle and then by using a wire loop. This procedure was carried out twice, eventually exposing the meningioma in the right frontal region at the base of the skull. The tumor was hard, rather flat and had a very broad attachment. It was obviously quite irremovable. On this account only a small portion of it was removed. The dura was left open.

PATHOLOGIC REPORT JUNE 6

Arachnoid fibroma (meningioma).

FURTHER DISCUSSION

All we can do is to hazard some guesses as to the immediate cause of death. The main cause was that

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Our treatment consists of sedatives and psycho-therapy, with strychnine and alkalies as adjuncts.

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Internist

meningioma which has been described. He had not had cardiac symptoms at all before operation. The heart was little if at all enlarged. A systolic murmur is nothing to make us suspect heart disease. Could he have had a postoperative pulmonary embolism? The last lines sound like that. I suppose one can get that even with a fairly normal heart, though one looks for it especially when the heart has been weakened and diseased previous to operation. Could he have had a pneumonia? It does not sound like it. We cannot rule it out, because we can have pneumonia with no more signs than we have here. We have sudden death and sudden cyanosis in a man who does not seem extremely sick before that. It sounds more like some accident, pulmonary embolism being the first thing to think of. There are some slight indications that his heart was failing before this terminal event,—dullness at the bases, rales and high pulse. The pain I do not understand. We do not expect pain in pneumonia and pulmonary embolism. Can these terminal events have anything to do with another tumor of which perhaps the one mentioned is a metastasis? I take it that the surgeon did not believe it to be metastasis; he took it to be primary in the meninges, and doubtless he was right.

CLINICAL DIAGNOSES (From Hospital Record)

Olfactory groove meningioma.
Pulmonary embolus.

DR. RICHARD C. CABOT'S DIAGNOSES

Meningioma of the olfactory groove.
Pulmonary embolism, or possibly pneumonia.

Discussed by Tracy B. Mallory, M.D.
Mass. Genl. Hospital

(From journal above.)

This man of course had a brain tumor. That was proved at operation,—a tumor arising from the meninges beneath the frontal lobe, a rather unusual location for a so-called meningioma. The majority lie over the temporal or frontal lobes. This was underneath. These tumors are always considered benign because they practically never metastasize and they almost never invade the brain. On the other hand they do very frequently invade the neighboring bones. There have been two cases in this hospital since I have been here where a house officer in the Outpatient Department started to remove a tumor, presumably a wen, underneath the scalp and found the tumor to be attached to the skull. Biopsies and subsequent operation proved them to be meningiomas. One does not ordinarily do brain surgery in the Outpatient Department, but only extremely good x-rays can prevent such mistakes. This tumor had involved the orbital plate, so that its removal was I am quite sure impossible.

The immediate cause of death was a massive pulmonary embolus. The cause of the pain in the chest and the cyanosis for a few hours preceding death was also pulmonary embolism. There were two medium-sized emboli which caused infarcts, one in the right middle lobe, the other in the left lower lobe. Pulmonary emboli are more commonly multiple than they are usually given credit for being. Quite frequently the development of an infarct in the lung is good warning to us to be on the watch for a larger pulmonary embolus. Now that major pulmonary emboli have been removed a few times successfully, anything which might lead one to be prepared for the emergency is well worth paying attention to. And in this case we have a very suggestive history.

ANATOMIC DIAGNOSES

Meningioma of the olfactory groove.
Pulmonary embolus.
Infarcts of the lungs.

ST. JOSEPH'S HOSPITAL FOR INTERNS

The acceptance, by the Council on Medical Education and Hospitals of the American Medical Association, of St. Joseph's Hospital at Phoenix for giving the fifth year in medicine to interns, is the culmination of many years' development. The rigid requirements of the Council are difficult to meet and place a great responsibility upon any institution which attempts to give the necessary training to interns sent there for clinical training required in the fifth year. The hospital is to be congratulated on meeting these requirements and becoming the first hospital in the Southwest to be accepted for intern training. It is not yet known where the intern or interns will come from in June, but the hospital will be prepared to receive them, with the necessary residential quarters, library for study and curriculum of training by the staff.

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NEWS ITEMS

THE THIRD INTERNATIONAL CONGRESS OF RADIOLOGY will meet in Paris from July 26th to 31st of the present year. This Congress is a triennial gathering and is a very comprehensive meeting, at which all the new developments in radiology and allied sciences are brought before the members by the outstanding men from all parts of the world. The official delegates from the United States are Dr. Albert Soiland, representing the Section on Radiology of the American Medical Association; Dr. James T. Case, representing the American College of Radiology; Dr. Douglas Quick, representing the American Radium Society; Dr. George E. Pfahler, representing the American Roentgen Ray Sosiety; and Dr. E. C. Ernst, representing the Radiological Society of North America. Further information may be secured by any one interested, from the Chairman of this Delegation, Dr. Albert Soiland, 1407 S. Hope St., Los Angeles, Calif.

THE AMERICAN PUBLIC HEALTH ASSOCIATION will hold its Sixtieth Annual Meeting in Montreal, September 14 to 17 of this year. The Windsor Hotel wlil be the headquarters. This Association is one of the large national gatherings, and attracts attendance not alone from the public health workers, but from the medical profession generally.

INDEXES FOR 1930, for this journal, may be secured by any one who desires a copy, by addressing the A. C. Taylor Printing Company, 121 E. Jefferson St., Phoenix, Ariz.

ST. JOSEPH'S HOSPITAL STAFF

Regular Meeting, February 9, 1931

St. Joseph's Hospital Staff was called to order promptly at nine o'clock, Monday evening, Feb. 9th, with an attendance of 50 members of Regular Staff, 3 members of Visiting Staff, and 17 visitors.

Minutes of the previous staff meeting and report from the Executive Committee were read.

The Hospital Analysis for month of January was read by the secretary, showing 366 admissions during the month, 30 deaths and nine autopsies.

Staff conference program had been arranged by Dr. Frank J. Milloy, of the Executive Committee, as follows:

Case No. 21141, death following Mesenteric Thrombosis, was presented by Dr. Howell Randolph, with lantern slide illustrations of electrocardiograms. Discussion of the case was by Dr. J. H. White, and autopsy findings were presented by Dr. H. P. Mills, pathologist for the hospital. Case presentation, discussion and autopsy reported are appended hereto as part of the records.

Case No. 21664, head injury with depressed skull fracture was presented by Dr. L. C. Barlow,—discussion attached. Main discussion was presented by Dr. R. D. Raney. This case brought forth a generous discussion of acute cranial injuries and method of handling them.

Dr. E. R. Holman, professor of surgery, Stanford University, a visitor, was asked to take part in the discussion, and contributed some valuable points from his experience. Other participants in the discussion were Drs. Gaskins, Milloy, Leff, E. P. Palmer, Ross, their questions and comments being answered by Drs. Raney and Holman. Summary of these discussions is appended at the close of Dr. Raney's main discussion.

W. W. WATKINS,
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EL PASO COUNTY SOCIETY AND EL PASO HOSPITALS ELECT OFFICERS

The newly elected officers of the El Paso County Medical Society, for the current year are as follows:

President, Dr. J. W. Laws.

Vice-President, Dr. S. A. Schuster.

Secretary-Treasurer, Dr. Ralph Homan.

Censors, Drs. W. W. Waite (1930), G. Werley (1929), S. D. Swope (1928).

Delegates to the Texas State Medical Association, Drs. R. L. Ramey and T. J. McCamant; Alternates, Drs. F. P. Miller and R. B. Homan.

Librarian, Dr. F. C. Goodwin.

Associate Editor, Dr. James J. Gorman.

Members of Board of Managers of Southwestern Medicine, Drs. Paul Gallagher and W. L. Brown.

Delegate to American Society for the Advancement of Science, Dr. E. C. Prentiss.

Milk Committee, Drs. J. A. Rawlings, P. A. Black, Mattie I. Hill, C. F. Rennick and R. H. Geer.

The Staff Officers of the City-County Hospital are as follows:

President, Dr. W. R. Jamieson.

Vice-President, Dr. S. H. Newman.

Secretary-Treasurer, Dr. Sherrod Mengle.

Efficiency Committee, Drs. T. J. McCamant, J. E. Morrison and James J. Gorman.

The Staff Officers of the Hotel Dieu are the following:

President, Dr. G. Werley.

Vice-President, Dr. E. W. Rheinheimer.

Secretary-Treasurer, Dr. Bloyce Blanton.

Efficiency Committee, Drs. James J. Gorman (chairman), Willis W. Waite and H. H. Varner.

THIRD CONGRESS OF THE PAN-AMERICAN MEDICAL ASSOCIATION

Mexico City, Mexico, July 26-31, 1931

The Organization Committee of the Third Congress of the Pan American Medical Association has made a cordial invitation to those who are interested in medical interchange among English, Spanish, French and Portugese speaking doctors of Pan-America for our next meeting which will be held at the City of Mexico from the 26th to the 31st of July 1931, under the auspices of the Government of the Republic of Mexico.

This Medical conference meets for the purpose of maintaining and promoting a more intimate understanding between the medical men of the New World, and with the efforts of many prominent North and Latin American Physicians, a great success has been accomplished in the past meetings.

The proceedings of these Congresses reveal a record of achievements so necessary for the better scientific knowledge among our countries, and a definite step toward International Medical progress.

Mexico, though so close to home and filled to bursting with the things we like to see and to enjoy-beauty, history, gayety, novelty, hospitality—is too little known by Americans. There is much in Mexico that fulfills every wish of those who travel for pleasure and diversion but also for those interested in Educational, Public Health and Scientific institutions.

Information can be obtained from:

Dr. Francisco de P. Miranda. Executive Sec. of the Organization Committee. Departamento de Salubridad Publica. Mexico City, Mexico.

Dr. Conrad Berens. Treasurer Pan-American Medical Association. 35 E. 70th St., New York, N. Y.

Dr. Jose E. Lopez-Silvero. Executive Secretary of the Pan-American Medical Association. Secretaria de Sanidad y Beneficencia, Habana, Cuba.

"Stone walls do not a prison make,

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Winter is a jailer who shuts us all in from the fullest vitamin D value of sunlight. The baby becomes virtually a prisoner, in several senses: First of all, meterologic observations prove that winter sunshine in most sections of the country averages 10 to 50 per cent less than summer sunshine. Secondly, the quality of the available sunshine is inferior due to the greater distance of the sun from the earth altering the angle of the sun's rays. Again, the hour of the day has an important bearing: At 8:30 A. M. there is an average loss of over 31%, and at 3:30 P. M., over 21%.

Furthermore, at this season, the mother is likely to bundle her baby to keep it warm, shutting out the sun from Baby's skin; and in turning the carriage away from the wind, she may also turn the child's face away from the sun.

Moreover, as Dr. Alfred F. Hess has pointed out, "it has never been determined whether the skin of individuals varies in its content or ergosterol" (synthesized by the sun's rays into vitamin D) "or, again, whether this factor is equally distributed throughout the surface of the body."

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